The Builder.

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Sites and Construction of Hospitals.

WE propose to devote two or three additional papers to a discussion of general principles on which hospital sites should be selected and hospitals constructed.

The sanitary history of hospitals may be summed up in very few words. There are hospitals on very bad sites: there are hospitals on comparatively good sites; but there is hardly an instance, in this country at least, of both hospital and site fully embodying those sanitary principles which are essentially necessary for a rapid recovery of the sick and maimed.

The one paramount sanitary condition which ought to be observed in all hospitals is that of having *pure and dry air* both within and without the walls of the buildings. The medical profession generally, and the public, have been so much in the habit of considering that medicine is some kind of occult force, by which disease is to be expelled from the human body, that it seems to have been thought sufficient for all purposes of curing and healing, that the sick man and the doctor should merely be brought together, in any locality, or under any conditions whatever. It used to be considered that human beings could live in any sort of place, and under any circumstances. And it is too much the fashion, even now, to consider that the sick ought to recover anywhere. Hospital trustees and committees consider they have done all that is requisite, when they have provided "the very best professional advice and assistance that can be obtained," and so the enormous mortality in hospitals has come to be considered as unavoidable, merely indicating "the per-centage of mortality inevitably resulting from disease."

It appears to us that sanitary reformers have too much overlooked the influence of hospital statistics upon the mortality of particular towns. It is true that the startling increase produced in the mortality of a registration sub-district by the accidental position of the union workhouse in it is well known. But it does not seem to us that the question has always been considered, whether much of the high mortality of particular towns is not due to the bad sanitary state of local charitable institutions. Towns, as everybody now knows, are more unhealthy than the country. But is it recognised that hospitals in towns follow the same law? That, other things being equal, a hospital in a town ought to yield a higher mortality, a longer duration of sick cases, fewer permanent recoveries, and a greater current expense to the administration, than a hospital in the country would do for the same number of cases? Again, "Hospitals," says a great living statistical authority, "are adapted to an intermediate state of civilization." But the question of how much hospitals, in their present condition, increase the mortality among the poor of this "intermediate state of civilization" has scarcely been touched. We can only state the question, and pass on. The importance of an inquiry as to what is the relative mortality in hospital practice and private practice among the poor (considering, too, that cases supposed incurable are never received into hospital) cannot well be over-rated.

To return to our main question, we state broadly that "town districts" should be avoided for hospital sites. Air of sufficient purity is not to be obtained in towns. Every existing town hospital ought therefore to be removed into the country, if it be possible to do so. At a moderate distance from towns land is much cheaper than in close-built places; and there are many large hospital establishments covering considerable areas of ground in crowded and valuable parts of towns and cities, which might be removed to the country, not only with incalculable advantage to the sick, but with great pecuniary gain to the hospital establishment. Even in so vast a place as the metropolis, a few casualty wards, where accidents might temporarily be seen, rooms for the examination and the reception of cases, and suitable vehicles for transferring them to the country, would be all that would be necessary to effect the reform.

The single consideration that the welfare and speedy recovery of the sick must be considered as the main object of all hospitals, ought to determine the removal and reconstruction of any unhealthy hospital, provided there be the pecuniary means of doing so; and if these are deficient, every exertion should be made to obtain them.

The foundations of every hospital should be laid in dry ground, which should be covered by concrete; or the building should have an arched basement, preventing the soil from having any communication with the floors above. Basements, enclosed and connected with the wards by staircases, are inadmissible, as affording ingress for damp air from the subsoil to the air breathed by the sick. A gravelly, or sandy subsoil, well drained, is the best. Clay subsoils are unsuitable in proportion to their power of retaining moisture. Made-ground, or ground covered with decaying organic matters, such as sweepings of streets, old burial-grounds, &c. should be sedulously avoided. One of the most ill-advised proposals for building a hospital which perhaps has ever been entertained is that of extending one of our great metropolitan hospitals over St. Clement Dane's burial-ground, which has for years been a public nuisance to the metropolis. The vicinity of marshes, wet ground, damp valleys, river estuaries, and mud-banks should be avoided. The choice of the position of the new Royal Victoria Hospital, at Netley, with its ten square miles of mud, is singularly unfortunate. The natural configuration of the ground should admit of the buildings being protected from prevailing cold winds. The local climate should be dry. There should be a good supply of pure soft water.

Wherever "Accident-wards" are required in towns, care ought to be taken to select a healthy district, not closely populated, with no nuisances nor other local causes of disease in the vicinity.

The great principle to be kept in view in the selection of sites and climates is that recovery from sickness in the vast majority of cases depends perhaps more upon pure air and pure water, with suitable diet, than upon any medical treatment, however skilful. The same remarks apply to surgical cases, in many of which there is a greater susceptibility to the influence of external causes than is to be found even in medical cases. The idea which ought to be uppermost in the minds of hospital committees, of architects, and of medical men, is that of *pure air*. Better leave the sick and maimed at home, unless this be realised. The aggregation of a number of helpless sick and maimed under one roof, in a given space, without attention to this requisite, may be at any time, as it has often been, and now is, nothing but manslaughter under the garb of benevolence.

The proof of this on a colossal scale, was the mortality at Scutari, which actually reached in the month of February, 1855, just before the Sanitary Commissioners commenced their labours, the incredible rate of 415 per cent. per annum.* And this, when the character of the cases sent there from the Crimea had improved so much, that the general mortality of the army had diminished, notwithstanding up to this time the fearful and increasing death-rate of the Scutari hospitals.

In the Peninsula, as we learn from Sir J. McGrigor, the general hospitals had actually to be broken up, in consequence of the terrible rate of mortality within them.

Suppose a site already occupied by a hospital in which the condition above named, as first in importance, viz. that of *pure air* cannot be obtained. What is to be done? Ought we to go on receiving sick, in such a building, with the certainty that a number will be hurried prematurely to their graves year after year, who would have recovered, if the building had been in a more healthy place? Rather than admit so fearful an alternative, would it not be better to consider the question of removing the hospital altogether? Hospital sites in the midst of increasing populations, are far more valuable for almost any other purpose than for hospitals. Why not sell them, and remove the establishments into healthy districts, leaving only a few accident-wards, and offices for out-patients, and provide the means of transporting hospital patients to the new hospitals? Even medical schools ought to yield to true sanitary requirements. The sick ought not to be permitted to suffer, in order that any medical school, however good, may prosper. Medical schools would, however, prosper far more in the vicinity of good than of bad hospitals. The processes of nature by which the sick recover, would be seen in operation, instead of the processes of foul air by which the sick die, which latter, it is to be feared, forms a considerable proportion of the experience of some hospital students at the present time.

Having obtained a good site, how is that site to be used?—in other words, on what plan is the hospital to be built?

The fundamental idea of all hospital plans ought to be this: to have pure, fresh air in every part of the building. Fresh air is the *sine qua non*. Unless a building can be so planned that the sick shall breathe air as fresh within its walls as they could do externally, they will suffer in a ratio corresponding to the degree of impurity.

All surgical operations, all medical treatment, and all nursing, are subsidiary to this great central point in hospital construction and management. We again assert that it should never be forgotten for a moment, by hospital

* A mortality of "415 per cent. per annum," may startle some of our readers. It means, however, that, supposing the total number of sick cases to have been 104, then that the whole died in the space of three months; or, during the month of February, 1855, that British sick soldiers died in the hospitals at Scutari at this fearful rate. See the Honourable Sidney Herbert's Blue Book, "Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition of the Army, 1858."—The evidence of Miss Nightingale, pages 361 to 394. The mortality on some of the sick transport ships, from Balaclava to Scutari, was very much higher. The *Caduceus* embarked 430 sick, September 23rd, 1854, and disembarked the survivors at Scutari, September 29th. During the six days there died no fewer than 114 men, being 26½ per cent. of the total number embarked, or in the ratio of 16,150 per 1,000 per annum, or at the terrible rate of one thousand six hundred and sixteen per cent. per annum.

The whole of the evidence by Miss Nightingale is so clear, so important, so terrible, and so full of warning and instruction, that we wonder it has not been re-published in a separate form.

committees, by architects, and by medical officers, that on the purity of the air of a ward depend, in a great measure, the recovery or death of the sick and maimed, the usefulness or injury arising from the hospital, the duration of cases; and, consequently, the hospital economy: whether, in short, a hospital planned, erected, and supported by "voluntary contributions," is to be a blessing or a curse to civilization. And when we consider that (in the words of the statistical authority already quoted), "each individual requires a gallon of pure air every minute;" that "he cannot forego this supply of air so many minutes as he can forego food for days," is it a subject for wonder that pure air should be the main condition, as of health, so of recovery?

In the infancy of knowledge, when Christian benevolence provided for the sick and destitute, and where it also was the sole foundation of the work, hospitals were built in situations and on plans which were far from realizing the intentions of their founders. Mere shelter, food, and attendance were to be afforded to as large a number of sufferers as possible. In times of pestilence, the buildings would be crowded to excess, as we have seen in the case of the Irish workhouses during the famine of 1847. And who can tell how much of the dire loss of human life in the Middle Ages and during the great Irish calamity alluded to was due to benevolence misdirected?

One of the most striking illustrations of the results of absence of knowledge on these subjects is afforded by the experience of the Hôtel Dieu, at Paris. By the statutes of its foundation, "all applicants" were to be "admitted." It had 1,200 beds, and towards the end of the last century these beds used to receive at the same time from 2,000 to 5,000 sick. During epidemics as many as 7,000 sick have been in the building at one time. From 20,000 to 30,000 sick passed through the hospital every year, about 25 per cent. of whom were carried to the cemeteries. In the other hospitals of Paris the mortality was about 12½ per cent. of the sick.

The excuse for the enormous mortality of the Hôtel Dieu was the same as that which is put forward by ill, and even by many well-informed persons at the present day for the high rate of mortality in civil hospitals, and, during war, in military hospitals, viz. that only the worst cases were sent there, and that they were sent there only to die.

The frightful over-crowding and bad ventilation, with the absence of every sanitary precaution, were, however, the real causes of the catastrophe in the Hôtel Dieu, just as the frightful over-crowding, the want of ventilation, defective draining, and want of cleanliness, were the real causes of the catastrophe at Scutari.

Both catastrophes led to great discussion and inquiry on the part of benevolent and intelligent men. In the Crimea the Sanitary Commission was the result; in the case of the Hôtel Dieu, it resulted eventually in the introduction into France of the greatest improvements in hospital construction and management which have taken place up to the present time. In these cases great good came out of great evil. From the Scutari case it is also hoped, that great permanent improvements will arise in military hospitals; and it will be well, if the experience of our own civil hospitals should lead to similar results.

Let any one conversant with the phenomena of disease go into a badly-constructed, and, consequently, ill-ventilated ward, and look at the sick. Unless his senses are dulled by perverse education, he will detect that peculiar musty smell which always indicates more danger to the sick, than there is safety contained in the long list of benevolent and eminent physicians and expert surgeons who attend in the wards.

Let him look at the languid powerless character of the patients, and ask himself the question, What would be the effect of fresh air upon these poor sufferers?

Let him ask if nurses, or doctors, or medical students are ever seized with fever; and he may elicit some facts which will astonish him.

Let him go into the surgical wards and ask whether wounds heal kindly, whether operations succeed, whether hospital gangrene ever appears, whether erysipelas is common, whether purulent ulcerations and discharges are apt to take place?

In the new surgical part of the Edinburgh Infirmary he will be answered that "Hospital gangrene is never out of the wards." In the double wards of Guy's Hospital, in London, he will be told that they are only fit for medical cases. In the Scutari hospitals, he would have learned that out of 44 secondary amputations, 36, or upwards of 80 per cent. died; that in one month there have been recorded 80 cases of hospital gangrene!

To questions concerning the appearance of hospital fever among patients and attendants, the inquirer will also be answered too truly in the affirmative; and very likely he will be told at the same time, "that it is nothing more than is to be expected, considering the kind of cases received into hospital." This was the reply at Scutari, this is the general reply as to all casualties of the kind occurring in bad hospitals, civil and military. In fact, nature alone is to blame, according to these authorities, or else "contagion" is the cause.

Nature is never to blame. If the cases be bad as possible, all the more necessity is there for care in placing them where they may have a moderate chance to recover.

To place patients in musty wards is simply to kill them, with the addition of torture.

The great army surgeon, Sir John Pringle, knew this quite well when he asserted that hospitals were amongst the chief causes of the mortality of armies. We may safely extend this remark, and say that badly constructed civil hospitals and other charitable institutions increase the mortality of town districts.

We may take this for granted,—that no hospital ought to yield an annual mortality on its total numbers of sick of seven to ten or eleven per cent. per annum, as is the case with our existing metropolitan hospitals. A certain percentage of deaths is inevitable, but not a percentage such as this.

Again, the whole doctrine of contagion, in the case of fevers, may be said to rest on no stronger foundation than the observation of facts in badly-constructed and ill-ventilated hospitals, where emanations from the sick play a corresponding part to the emanations from cesspools and other nuisances, in producing fevers out of hospitals. Both classes of emanations may become fatal or remain innocuous, but all depends on the extent to which they are diluted in pure atmospheric air. A few fever cases in a crowded, ill-ventilated ward may spread fever; but in a well-ventilated hospital, with plenty of cubic space, they certainly will not. The mortality in some of our best-constructed fever hospitals is enormous, and indicates of itself how much they stand in need of improvement.

When fever, erysipelas, or gangrene spread in any hospital, such an event is no proof of "inevitable contagion" or "infection." On the contrary, it is Nature's method of teaching men that her laws are being neglected. If a medical officer, or nurse, has fallen victim to the disease, we may be quite sure that the disease is not to blame, but those who failed to observe and to obey the laws by which the disease is infallibly prevented from extending itself.

Hospital sites and plans should be selected in strict conformity with Nature's laws; and not till this is done will the outcry against hospital contagions cease.

We propose in a future number to consider further some of the main principles of hospital construction.

THE WELLINGTON MONUMENT IN ST. PAUL'S CATHEDRAL.

After the attention we gave to the models exhibited at Westminster Hall—together with the inquiry into the principles for monumental sculpture and public statues; and after our recent article on *competition*; it will have been inferred that we should not leave without further notice, proceedings of late which have had reference to each of the questions. Whether, however, we confine ourselves to the subject of the present design for the Wellington Monument in St. Paul's Cathedral, or view the general question of competitions, and with aid of light from the labours of the Committee on Government Offices, we shall find we can arrive at few positions that we have not already taken up. It is in no spirit of laudation that we refer to this contingency of our duties: we allude to it only that we may avoid repetition, or otherwise the imputation of that in cases which are so important that they claim the renewal of arguments. We must be accused of leaving without notice the topic of the week, or run the risk of a different charge against us, and on the score of noticing it.

As to competition, latest experience corroborates the view of the futility to an architect or a sculptor of any dependence upon it for the recognition of merit, or upon success in the first instance as leading to a return for the *design* by the payment for execution of the work. As regards advantage in another direction, the refusal of Mr. Gibson to enter into the limited competition for the Monument, as into the recent competition which was unlimited, is evidence of what is to be expected by the public from others of his position in any case. The Earl of Derby, in the House of Lords on the 2nd ult. referring to the allotment of the chief premium in the Wellington Monument competition to Mr. Marshall, merely for the "intrinsic merit" of the composition, and by no means with regard to the situation it was to occupy, (a consideration which, the judges had ingenuously said, "might possibly have led to some difference in the selection"), actually founded an argument upon the premises, which could be but suppositious—as they left the question of real merit untouched, and were constituted as such only by the admitted incompetency of the judges. Merit of designs thus being, at one stage of the proceedings, in fact, disregarded in the adjudication; at the new stage now arrived at, the course is to throw aside the "intrinsic merit" and known qualifications of sculptors, and to revert to the position of giving a commission, though not to artists admitted to be of the highest rank. The question of competitions,—as to the advantage from them to art and the public, and to the competitors,—thus hitches into the dilemma; namely, on the one horn thereof, we have the system not benefiting aspiring men, or those first selected, as they are led to anticipate; on the other horn, we have it not furnishing the public with the design which it was the object to elicit.

The present design (if we may speak of it as matured) for the Wellington Monument, is based on a principle entirely different from that of the designs made for the site first named. We are amongst those who believe that the first site was not well chosen for the sculpture, or for the effect of the building as modified by the addition. Even in those Gothic cathedrals where there are monuments or chantry-chapels between the nave piers, in certain cases the intrusive excrescence is hardly to be defended; but much more unsymmetrical would be the general effect of a building where the nave arches are few in number, and of no great height; and where, if the want of symmetry had been corrected by monuments of the same kind under the remaining arches, the fine effect of the oblique perspective of aisles, seen from points at either end of the nave, would have been in great measure done away with. The disadvantage to the monument, as according to the larger number of the designs at Westminster Hall, which there would have been through its position against the light, so frequently adverted to, can be understood from observation of the figure of Sir Ralph Abercromby, in the monument to him in St. Paul's, where the features cannot be distinguished at ordinary times of the day. In some of the models at the Hall, this was sought to be avoided by constructed background, or by having the head of the figure of the Duke at such elevation as to appear with the ceiling or window arch behind it. The first-mentioned contrivance was adopted in the excellent architectonic design by Mr. Thomas, of which we gave an illustration; and in another design, that by Mr. Durham. The other arrangement was followed by Mr. Bell, in his models marked "Studens." It remains to be seen what shape the design of Mr. Stevens will take, and whether similar difficulties of the present site will be overcome.

At Westminster Hall, it seemed to us that the height of the monument, according to Mr. Stevens's model, would be far too great, supposing that it could be placed under the arch at all; and the level of the ceiling of the Consistory Court is the same as that of the arch, or corresponding in height with the vaulting of the aisles. An equestrian statue, as the crowning feature of the monument, would be

ridiculous if reaching anywhere near to the ceiling. Modification, therefore, required in the design, must be very considerable, and such as to effect a complete alteration in the proportions and character. In the course of the debate on Mr. Stuart Wortley's motion, in the House of Commons, on the 29th ult. Lord John Manners was understood to refer to *alterations* which Mr. Stevens was ready to make. Now, whether regarding what is to be done architecturally at the new site, or otherwise regarding the mere work of the sculptor, the "alterations" in reality will be the making a new design. We expect from Lord John Manners better reasoning as to the force of alterations in artists' designs, than prevails with the public. In point of fact, a design once produced, if it have any distinctive character and merit, cannot be modified: it must become a new thing; and it will generally be a worse thing by alterations than it would have been if it had been recommenced from a basis. There are poets in the House of Commons. What would become of the *poetry* in the writings of the First Commissioner of Works, if it were pared and patched to suit the fancy of Mr. Milnes, or *vice versâ*, his to suit that of the Commissioner? It would all vanish bodily. Or what would be the result of a combination of original literary talent as that of Sir E. B. Lytton and Mr. D'Israeli? There are instances of co-partnership in art, but they are exceptional; and when inquired into, do not disprove the general rule as to works of mind. There was but one Homer, spite of all the commentators. Now, artist and poet are the same; or their works are reflections of the same mind speaking by different languages. Mr. Stevens pointed the truth of the position, when he selected for the motto of his design the words,—"I know but of one art." He is, we believe, the same artist who exhibited a fresco—"A subject from Shakespeare's Richard III." amongst the works in fresco-painting and sculpture, which were displayed in Westminster Hall, in 1844. His name has been lately confounded with that of Mr. E. B. Stephens, the sculptor.

But, there are distinctions between the fields of the several arts, as we have taken pains to show; and it is as necessary to preserve these as to regard the unity. The artist in each branch, or separate art used in the decoration of buildings, must have studied the whole, for the proper comprehension of his own branch; and this is the case as to the connection between sculpture and architecture. But the Italian artists, so much referred to in the discussions, essaying the practice of all the branches, did not preserve the distinctions, and injured their works accordingly. There are certain principles, as of grouping, common to architecture and sculpture, which for the want of better phrase we call architectonic; and there are the matters belonging more especially to one of these arts, which the other has to use. In monumental art the distinctive character of the architectural or the sculptural monument, will follow from the particular professional practice of the artist, or the monument will be one architectural whilst bringing into use sculpture, or be a sculptural group with some details, and leading structural forms, of architecture. The rules of composition will apply to both cases, as will most of the æsthetic principles which lately have been so much the subject of attention in architecture. Whilst the symbolic, or the representative, is allowed, there will not be admitted that sort of mimicry where the observer is asked to take on trust the existence of what he knows cannot be there,—the fault which was so frequent in the models at Westminster Hall, and was not wholly wanting in the design by Mr. Stevens. There was sufficient evidence in the architectural detail and general mass of his model, that Mr. Stevens had attended to the study of architecture; and in that respect he might be thought to have perceived the requirements of monumental sculpture,—or like to those which we endeavoured to set forth, and which have been lately neglected by sculptors, but of which the importance has been shown by Professor Westmacott in his lectures. The design, however, was not one that we had expected would command a premium, and much less be chosen for the main feature in the monumental work. The occurrence of two representations of the Duke in the same monument, destructive of unity; and the mimicry of a sarcophagus, were errors of the worst kind; whilst the equestrian figure at all, for such a monument and place, and which, at the summit, made the character of the composition generally more suited for a site out of doors than for the interior of a church, seemed to us open to objections. Moreover, as to the new site, it is difficult to see how the monument can be placed consistently with the ordinary arrangement of recumbent effigies in churches,—with feet towards the east (which arrangement there are arguments for not departing from), unless alteration were made in what would seem the direction for the equestrian statue, which last cannot be quite satisfactory in effect if not set looking towards the spectator in the nave; for, if we are not forgetful, the model at the Hall, repeated the error seen at Hyde-park-corner, of an equestrian statue set transversely to the arch below it.

The present design, however, is really an architectural one, rather than as it was originally, for a work belonging mainly to sculpture. It is possible that this dominance of architecture is required for the highest character of effect. There are limitations to sculptural art, as regards the distinctive character of its field, which are soon reached; but, like painting, it has a field in subordination to the architecture of buildings; whilst the latter art is scarcely limited to scale and extent, or to multiplicity of combinations. It was an error to allot any sum like 20,000*l.* to a work on the idea that such a sum could readily be spent in sculpture. There is no monument in St. Paul's Cathedral on anything like the scale of designs sent to Westminster Hall; whilst at Westminster Abbey, works which are on a larger scale are destructive to the architecture; and their results show what would have been the effect on the building of St. Paul's had the perpetration of similar errors there been for a moment admitted. The original sum allotted (5,000*l.*) would have produced a work of sculpture generally more satisfactory than a work of more pretentious character would have been; and the system which has hitherto been adopted in placing the monuments, is that which generally should be adhered to in the cathedral.

On the assumption of the outlay of such an amount as 20,000*l.* and the bringing in decoration of part of the edifice as a portion of a monument, the principle of employment of an architect has of course our unqualified approbation. The want of purpose in the management of the business, is however, obvious; and from *competition* as an agent to art, the *gain* is rather, to speak in Irish, a loss. Knowing not accurately what is the exact design to be adopted, we can allow that Mr. Penrose and Mr. Stevens, with Mr. Marshall [if he be called in; but this has not been determined on], may produce a grand work. Opinions, however, as to the conduct of the business, and as to the worthlessness of competition under present circumstances, are unaffected by the admission.

We have far more difficulty in the question of the *patronage*, as it is called, of artists,—about the directions and instructions to them, and the public criticism of their works,—than about the merits of artists themselves. Mr. Stirling, in the House of Commons, thought that the mistakes and waste of labour by the competitors in this case were greatly owing to the want of more explicit conditions: but we have shown that the danger is, that conditions and instructions will prevent what is the very object of a competition. Lord Elcho has said, "public opinion has fixed the stamp of failure upon the results of the recent Wellington Monument competition," and "a general impression prevails that there is not that evidence of talent in the works of any one of the successful competitors that would justify his selection:" but "public opinion" is led by the nose; and we shall have some doubts as to the value of *general impressions*, till art-education has advanced in and out of the Commons' House of Parliament. Amongst the designs at Westminster Hall, we believe there were a moderate proportion, but quite as many as could have been expected, that were deserving of praise. Perhaps the best of the number were those very designs which were thrown out of competition by the stringency of the instructions. We do not hesitate to say that for the monument, we should have preferred either the design by Mr. Durham, or that by Mr. Thomas, to that of Mr. Stevens. The last had less originality as a monumental work, and less merit in the sculptural features; and the modelling (a matter deserving of consideration) allowed no means of judging of the technical skill of the author and his claims to be intrusted with the execution of an important work. If any one of the rewarded competitors had a claim; and we must maintain that to be the case; that one was Mr. Marshall, whether considering a design to be now adopted as a new one, or one already made. It is quite impossible to reconcile the reasoning as to the employment of competitors, which seems put forth as though it could be at the same time both for and against. If the Government were bound to employ some one of the competitors, the one they were so bound to was he whom they had constituted the best.

Approving, however, of the principle of an architectural monument, and the employment of an architect, we do not wish to look forward to any but the best result at last, though the events which will have led up to it will not the less on that account be injurious in some of their collateral consequences.

The Consistory Court is admirably well fitted to be made the field of a grand essay in monumental art. It will be recollected by those who are acquainted with the fine plan of the cathedral, as belonging to that part which forms a western transept. The towers fill in what would be re-entering angles on the ground; and so, extend the width of the external elevations of the transepts north and south, as well as that of the grand western façade. Internally, the arrangement as to the chapels or ends of the transept, and the manner of the junction of these parts with the aisles and nave, result in beauty of that order of the picturesque which latterly has been much neglected,—the effect to be originated in the design and distribution of *plan*, rather than sought for in meretricious accessories, or simulated irregularity. Looking at the Consistory Court (the northern chapel, used for morning service, is similar, even to the arrangement of the fittings), the plan includes, in the general oblong of the ground, a central area of square form, with semicircular niche-headed portions east and west. The area, or portion of the transept, has a ceiling with quadripartite groining. It corresponds and joins with the arches of the nave, the narrower vaulting of the aisles being groined in. Each severy of the quadripartite groining is filled in with an octagonal coffer and spandril spaces, the latter enriched with ornament: the mouldings are also enriched; and the coffer at the centre of the groining has a rose ornament. The oblong space formed at the intersection of the aisle with the transept, has a large panel with beautifully-enriched roll-moulding. The arches marking out the main divisions of the ceiling have their soffits formed into panels and coffers—the grouping of these parts of the design being especially deserving of notice. The nave arch, as well as that of the aisle and Court, or Chapel, differs from the ordinary nave arches, by springing from coupled columns. The semicircular portions of the plan above mentioned, are coffered by bands intersecting diagonally and springing from a radiating centre, which is enriched with a fan-like ornament. These features also have great beauty. The general wall surface is panelled, and at the lower part is covered with wainscoting, as mentioned in a former notice. The Court and Chapel at present are each of them parted off from the aisle by a wooden screen of fluted Corinthian columns. The entrance in the centre here is spanned by a curved pediment, without horizontal entablature, and bears vases, coat of arms, and other enrichments. The screen probably will be cleared away; but, if so, it would be well to have it preserved somewhere.

Those who have followed us in our arguments since we took up recently the subject of monuments, will understand that we regret in this case that the monument and the tomb are not to be one and the same work. For the same reasons that mimicry of a sarcophagus or tomb, as in the instances we referred to, is a misconception of the office and legitimate means of art; so the distraction or want of unity which is involved in two monuments in the place of sepulture,—the least elaborate and pretentious of which, moreover, will be ever the most impressive,—involves prognostication of inevitable short-coming. The monument to Nelson associates itself in some degree from its position with the tomb below, as would the Wellington monument, if it were to be placed on the corresponding pier by the entrance to the choir. Not so, however, will be the impression from the disconnection in the intended arrangement, which will be, we say, in effect that of providing two monuments. The idea of the manner in which a combination might have been made at once suggests itself, with the aid of recollection of the tomb at the Invalides.

MURAL PAINTINGS, FRANCE.

ST. QUENTIN'S.

An interesting discovery has just been made in the Collegiate Chapel of St. Quentin (103 miles N.E. of Paris). For some time past works of restoration have been carried on in that edifice, and the repairs have been executed with talent and perseverance. In that part of the chapel called "de la Sainte-Madeleine," a "piscina" was discovered some months ago, embedded in the thickness of a wall. Near this spot were brought to light the treasures of ancient art, which we

have to record, consisting in an ancient *mural painting* representing the life of Mary Magdalen.

The first group represents Mary accompanied by her sister Martha, at the moment when she throws herself at the feet of our Saviour to implore him to give life to Lazarus. Two apostles accompany our Saviour.

In the second group the artist has represented our Lord, surrounded by Magdalen, Martha, and some of the apostles, commanding Lazarus to rise from his tomb. The resuscitation is admirably depicted, as is also the position of the gravedigger, who is overwhelmed with mingled astonishment and admiration at the miracle. Further on, the same personages (excepting our Lord) are being expelled from the Land of Judea, and a troop of soldiers compel them to embark in a boat without oars or sails, and leave them to the fury of the elements: the background of this piece is filled in with a perspective view of Judea, with its ramparts and towers.

The fourth group represents the exiles, touching land at Marseilles (whose buildings are seen in profile in the horizon), and they are following Magdalen in the desert, to which she retired, in the south of Provence. The painter seems to have chosen the moment when, according to the popular belief in the legends, angels lifted her up whenever she was in prayer.

In short, to complete the picture the donator and his family are represented kneeling before an oratory, at the foot of which repose some relics, supposed to be those of Sainte-Magdalen.

We must not pass over the "piscina," which seemed to have received some special attention. Two angels are carved, in adoration before the sacrament. Above are images of our Lord, and the Virgin Mary. On the side is represented St. Quentin, standing up, holding in one hand the palm, in the other a book; the *nails* piercing his shoulders; this being the distinctive characteristic of the saint.

The above paintings are in oil, and seem to have been done about the sixteenth century; their *composition* is far from being inferior.

The most remarkable feature in the discovery is, that the whole of the church seems to have been decorated with wall-paintings, which every stroke of the "scraper" brings to light.

THE ARCHITECTURAL PUBLICATION SOCIETY.

Part I. for the year 1857-58, consisting of twelve plates of illustrations, has lately been issued by the committee. The subjects are confined to Mediæval architecture, excepting two plates; one being "Ceiling," giving examples from the nave of St. Peter's at Rome (contributed by T. L. Donaldson); the Church of San Marcello, in the same city (T. H. Lewis); a chapel in the nave of San Vittore, at Milan (from the portfolio of the late A. J. Green); the music-room of the Palazzo Boabdelle at Rome, showing the construction which gives the groundwork for the decoration (J. J. Scoles); and the hall in the house of the Peller family at Nuremberg. The other plate, not Mediæval, is entitled "Cinque-cento," and illustrates a panel in the stairs up to the pulpit in the cathedral at Sienna (F. P. Cockerell), an extraordinary specimen by Peruzzi, the scrolls springing from, and terminating in, griffin-like monsters, affording an instance of misappropriated ornamentation. This can be compared with that exceedingly fine specimen by Sansovino, from a tomb in the church of Sta. Maria del Popolo at Rome (E. H. Martineau). A somewhat similar tablet to this, also by Sansovino, is given on a larger scale by Gruner, in his specimens of ornamental art, and should be referred to by those studying this peculiar style. A cast will be found in some of our collections. "Candelabrum" is illustrated by the celebrated metal standard of a large size, surmounted by a crucifix, at Leau, in Belgium (S. Salter, jun.); and two smaller branches, comprising figures supporting the stand for the light, which must surely be a little distorted in the drawing. "Canopy" furnishes three known examples from Verona and Bologna (G. Aitchison, jun.), two of them covering tombs, and the other forming the head or frontispiece to a door. Two plates are given to "Capitals," the first chiefly of the Byzantine period; the second, the later styles of Gothic architecture. Venice, Ravenna, Subiaco, Piacenza, Orvieto, in the former, with Amiens, Chalons, Palermo, Florence, Les Audelys near Rouen, Ratisbon, and Ely, in the latter plate, furnish instances all more or less worthy of study; some showing foliage almost natural; others foliage more and more conventionalized, giving various modes of treating sculptured work,—from mere incision, through slight projection, perforation, and attempt at projection, to high relief. In addition to the name of G. Aitchison, jun., H. R. Newton, J. M. Lockyer, H. B. Garling, jun., G. R. Clarke, F. P. Cockerell, S. Salter, jun., T. H. Lewis, C. Fowler, jun. we are glad to see, for the first time, those of F. C. Penrose and W. Burges, the latter of whom has also contributed the material for the second plate of "Ceiling," being a sketch (1848) of the curious example from West's Chapel in Ely Cathedral. West was bishop from 1515 to 1533; and, whilst the walls of the chapel are crowded with late Perpendicular carved work, the ceiling is formed by an also richly panelled vault in the Italian style. Most of our readers will, no doubt, recollect this to be one of the very earliest instances of the introduction of that style. We are not aware of its having been drawn to so good a scale before. "Chatean" has three picturesque examples from Langeais, Brissac, and Azey-le-Rideau (S. Salter, jun. and H. B. Garling). Nineteen more illustrations are given of "Church Plan," showing diversity of form and arrangement sufficient for any stickler for precedent. The interesting "Cloister" at St. Trophime, at Arles, dating 1120, 1220, and 1387, is given in detailed drawings (T. Roger Smith), and other plates are occupied by "Corbel" and "Cross."

At the conclusion of our review of the last part issued by the Society, we felt it a duty to take exception to the appearance of the plates. Some endeavour has evidently been made to prevent a recurrence of the evil; but, upon a comparison of the numbers issued in the earlier years of the Society's operations, the present plates do not exhibit the careful drawing in the shadows, &c. which gives crispness, whereas there is now blotchiness. We would urge a recurrence to the earlier style of work, in fact to *drawing*, and not *stumping*, as being more likely to give satisfaction to the artists who are mainly subscribers.

Having said thus much of the illustrations, we must now notice the completion of the letter C in the text of the "Dictionary of Architecture." It cannot be expected that the critic should take up a part of a Dictionary, with any hope of seeing all the beauties and all the faults of the work; but having faith in the figures, &c. put forward as facts, we note the general care that appears in the preparation of the articles, the novelty of some of the heads as to subjects not before treated, and the new treatment of old subjects: of this latter class we should instance "Chimney" and "Church." The care given in the assemblage of statements is evident in the articles, "Chichen" and "Cordova," which furnish amusing but vexatious specimens of the variance in dimensions taken by different travellers; and "Cistercian Buildings" opens a rich field for consideration, as to character in architecture. We would especially direct the attention of some of our readers to this and kindred articles; for the fact is too often lost sight of that our monasteries and subordinate buildings were erected by sets of ecclesiastics, each having their own views of accommodation, arrangement, and art. Among the principal articles of topographical interest, we must point out the account of the modern portion of "Constantinople," supplied by Mr. W. J. Smith, long resident in that city. The information on Spanish architecture and architects will, no doubt, be largely used as that beautiful country improves in its facilities for the accommodation of the English traveller. "Albert de Cotte" is stated to be the inventor of the much-abused system of modern internal decoration by means of mirrors; and the account of "Chateauneuf" appears to be condensed from the account, prepared for the Society, which will be found in one of our previous volumes. Indeed, our pages are referred to, necessarily, not a little;—witness "Crest," which is mainly due to the interesting paper by Mr. W. Burges. The articles, "Compression," "Condensation," "Contract," "Corrugated Iron," "Cradle Roof," and "Cylinder," keep up to the mark of their predecessors: their very titles suggest the appalling extent of knowledge which the architect is now forced—not only to obtain when he begins to work but—to continue gathering throughout his lifetime. Among the specialities of this part, may be noticed the useful memoranda collected under the heads of "Cheese-market," "Coach-house," "Coal-cellar," "Conservatory," &c. We may draw attention to "Churriguresque," "Cinque-cento, and "Compensation." The initials to "Chancel" and "Choir," show that the articles have been the groundwork of the papers, by the same author, in the pages of the last volume of the "Archæologia." Under the heading "Concrete," the experiments related at the Institute, purporting to show that there is no loss of quantity in the ballast when made into concrete, in opposition to the experiments given in the Prize Essay of the Institute on the subject, have been too hastily adopted, as we shall take an opportunity to show.

We would urge that the work deserves a larger circulation than it seems to have; if but for one point alone, its excellent references to other publications, which makes it of itself a classed catalogue, a desideratum which has occasioned appeals from authors and students in all arts and sciences.

THE MEDICAL CHARITIES OF LONDON.

THE SAMARITAN FREE HOSPITAL.

This marvellous metropolis, with all its mighty wonders, has no greater glory than those charitable institutions which are provided for the benefit of the sick and suffering poor; and notwithstanding that these institutions are endowed with an annual income of upwards of three-quarters of a million sterling, the great increase of the population and the spread of London call for the erection and endowment of new ones,—in proper places.

The progress of science is another reason for the rearing of other buildings—which may be devoted to the cure of specific ailments; for at the present day, while the mass of the medical profession has greatly advanced in the general knowledge of diseases, it is more usual now, than formerly, for eminent physicians and surgeons to devote their chief energies to master the peculiarities of some single complaint; and we have, in consequence, chiefly through the energetic exertions of medical men, seen hospitals rise from the most humble beginnings to important establishments, which are of constant benefit to thousands.

We have now, either in the town or suburban districts, often very wrongly placed, as we have elsewhere said, hospitals for diseases of the eye and ear: that terrible plague of England, consumption, fever, small-pox, spinal complaints, cancer, madness, and other "ills that flesh is heir to," have separate places, which, in most instances, are benevolently presided over by the most eminent practitioners of each department of medicine.

The history of the origin and early struggles of some of those which are now great hospitals, shows a degree of perseverance and faith in the ultimate success of good objects which it is pleasant to think of; for although Guy's, and some other hospitals, were endowed at the commencement by worthy individuals with large resources, it has been the case that the chief number have been originated in a very humble manner, and have depended for their existence, for a length of time, on the (sometimes slender) funds and exertions of a single person.

The Royal Free Hospital, in Gray's-inn-road, and many others, might be mentioned as encouraging instances of the great good which has resulted from trifling beginnings. Our object is, however, at present, to direct attention to the Samaritan Free Hospital, now situated in Orchard-street, Portman-square; which is a remarkable example of the condition to which we have now referred.

In 1847, the originator of this institution felt that although there was a Lying-in Hospital, and others devoted to some of the diseases of women and children; some of those complaints incidental to child-birth, and those of young children, were left unprovided for, and that the fatal sickness of children was particularly neglected; for at that time, the hospital for children, now in working so usefully in Great Ormond-street, Queen's-square, was not in existence; and in the general hospitals, children of tender years were either not admitted, or else but scanty space was allowed. When we consider the vast importance of the health of the mother of a family, and the immense destruction of infant life, it is evident that an institution such as that under notice, was greatly needed.

The "Samaritan Free Hospital" was commenced in the year above mentioned, in a small back room in a poor part of Marylebone, with a rental of 5*s.* a week. This infant hospital soon attracted the notice and professional aid of gentlemen of first-rate skill, and with an income of 100*l.* relief was in the first year given to 3,815 cases (all women and children). In 1850, the cases amounted to 6,487. It was found that the limited means of accommodation for in-door patients was a sad evil, for it took on an average five times as long to the diseases which were treated out of doors, in comparison with those in hospitals; and this is not to be wondered at when we consider the arrangement of the dwellings, the want of knowledge and improper food which in so many instances is the lot of the metropolitan poor. During eight years they struggled on in

an unfavourable neighbourhood, and under other difficulties. There were, notwithstanding, 63,364 sick persons treated. They then removed to the house in Orchard-street, when, as the hospital became more generally known, greater demands for indoor and better accommodation for the numerous outdoor patients became a necessity. During the last year, 8,175 patients were relieved, at a moderate cost, (including food and other matters which are as needful as physic for the cure of many who have suffered sad privations.

Trusting to the strong claims which such an establishment as this has upon the generous public, the committee have ventured to engage a house in Edward-street, Portman-square, and have had it as well fitted as possible with the various necessaries. This has caused great expense, which must cripple the usefulness of the hospital if left unaided. Considering that for eleven years the kind conductors of this needful charity have yearly increased its usefulness, and placed it amongst the established hospitals of the metropolis; and having with our own eyes witnessed the distress occasioned by the illness of mothers in poor circumstances, and the little chance there is for sick children without such aid as is here offered, we hope that the assistance which is required to defray the charges of the new buildings will not be withheld, notwithstanding the views we have expressed in another article.

THE CHERBOURG RAILWAYS.

The Cherbourg Railway having been open for public traffic since the 25th of July, was officially inaugurated on the 3rd and 4th inst. The fêtes, which took place with unusual splendour, were honoured by the presence of the courts of England and France.

As the attention of the public has been already turned towards this enterprise, a few words may be not uninteresting as to its commercial and financial position.

The Cherbourg line forms part of the "Normando-Brittany" group, and was included in the general plans of railway communication of 1846. Its execution, retarded by the revolution of 1848, ly received the serious attention of the company in 1852. At that period a concession was formally signed for the continuation of the works from Caen to Cherbourg, and a subsequent fusion of the different companies under the name of "Chemins de Fer de l'Ouest," developed, in 1855, the Normandy group, especially the Cherbourg extension, commenced with active vigour under the superintendence of Mr. Locke, with Mr. Brassey for a contractor, and brought to a successful termination within the last few days.

The section from Nantes to Lisieux was opened in 1855; that from Lisieux to Caen, in 1856. Lastly, after two years of work, pushed forward with the greatest zeal, Paris is put in communication with the great naval establishment of Cherbourg, as well as with the industrial towns of Lower Normandy, whose commercial products will not fail to enrich the metropolis.

The execution of the Cherbourg line presented some difficulties. Traversing an undulating country, intersected by numerous valleys, many important works were necessary to give solidity to the line on shifting soils and loose ground. On the first section, between Nantes and Caen, the Bréval tunnel had to be strengthened by immense masses of masonry, owing to its having traversed an argillaceous formation, intersected by numerous springs. Another tunnel, that of Couche, through chalk and sand, required very heavy masonry. As the *Moniteur* says, "No railway in France required so much earthwork as this one, especially on the first section above named." The total quantities from Nantes (where the line branches off from the long-established Paris and Rouen line) to Cherbourg are above 10,000,000 cubic mètres of excavation, and about the same for the embankments. The total length of the tunnel is only 4,388 mètres; but, on the other hand, we count 70 river bridges, 310 bridges under and over rail for high roads, 700 for farm-road bridges or their diversions, 114 level crossings, and 400 culverts. The line is only double as far as Lisieux; but earthworks and masonry are made for a second line as far as Lison. When the whole line is perfected to Cherbourg, the cost will be for the double line, &c. 360,000 francs per kilomètre, or 16,800*l.* per mile English.

The principal factories on the line are those of Evreux (cotton cloths), and of Bonneville and Couches (forges and foundries). It has been decided that the Rouen line shall communicate with that of Cherbourg by a branch, starting from the Elbeef station of the former, and abutting on the Serquiny station of the latter line, which will place the extensive coal districts of Flanders in communication with the Normandy and Brittany factories. Another branch, from Mézidon, on the Cherbourg line, to Alençon, on the Rennes Railway, will increase its prosperity. The Caen and Cherbourg section, just opened, is 131 kilomètres, and contains twelve intermediate stations. The distance (about 10 kilomètres) between the stations is what has been generally observed on the Continent in wealthy and industrial localities, or in the most populous districts. In fact, the departments of Calvados and La Manche rank with the most populous in all France.

Already between Caen and Bayeux the passenger traffic is immense. As to the goods traffic of the line, it promises much. The Andrieu-Tilly station, in the midst of a rich and fertile canton on the banks of the Seulle, a river literally covered with corn and oil mills, promises an important traffic.

The Bayeux station will be supplied by the tanneries, potteries, and porcelain factories of the surrounding districts, the fisheries of Port-en-Bessin, and the butter trade which forms the great industry of the province. But, incontestably, the most important station is that of Lison, whence the line is to branch off to Saint-Lo.

ENGINEERING AND OTHER WORKS ABROAD.

By a treaty ratified at the meeting of the 20th ult. the Northern Railway of France, "*Chemin de Fer du Nord*," has consented to construct the line from Namur to Givet, and has already completed the surveys. The length is about 46 kilomètres. Making use of the Great Luxembourg Railway to within a short distance of Namur, it branches off some hundred yards from the bridge which carries the train over the Meuse, and developing along the left bank through Jambes, Dave, Taillefer, Godinnes, Yvoir, and Banvignes, it crosses to the left bank to arrive at Dinant. Thence it is directed towards Givet through a winding country, which offers some difficult work for a length of about 16 kilomètres, and joins the Ardennes Railway 4 kilomètres from Givet. The Ardennes line branching off at Mézières runs on the one hand to Rethel and Reims, and on the other to Sedan and Thionville.

By a decree of the 17th of August, 1853, relative to a concession of the Mulhouse Railway with a branch to Coulommiers, and to those of the Paris and Vincennes to St. Maur, the "*Compagnie des Chemins de l'Est*" engaged themselves to complete in three years the branch lines to Coulommiers and to Vincennes and St. Maur. On the 8th of July last additional time was granted. The Vincennes line is to be completed the 1st of May, 1859, and the Coulommiers branch on the same day in the year following.

By an order of the 15th ult. the Paris and Soissons Railway is to pass through Dounsartin, Nantueil le Handouin, Crespi, and Villers-Cotterets, as proposed by the "*Chemin de Fer du Nord*," to whom the concession has been given.

In Algeria railways have made but little progress. Earthworks between Algiers and Amoura have been, it is true, made by soldiers, but that is all. As the *Journal des Actionnaires* says, "*L'exécution réelle et sérieuse des chemins de fer Algériens est entièrement liée à l'émigration des capitaux Européens en Algerie.*" The new minister for that colony has promised that the great question of railway communication for that portion of the globe shall receive his best attention, and that he will neglect nothing that can tend to bring it to a prompt and complete solution.

After an official document transmitted by the Government of Cuba, it appears that it contains thirty-one lines of railway terminated. Their total length is 1,514,516 mètres, and the cost 32,336,652 piasters.

Vienna correspondents state that the Lombardy Venetian Railway Company is in negotiation with the Government for the construction of the South Tyrol line (Bolgen to Venice), and the North Tyrol (Inspruck to Kustein).

On the Corinthian Railway 7,000 workmen are actively employed between Marbourg and Klagenfurt.

New surveys have been commenced for a coast line from the Var (Sardinian frontier) to Nice and Genoa.

On the Pia-Latina Railway (States of the Church) the works are so far advanced that in seven months the Rome and Frascati line will be extended to Velletri. At the same time, on the Naples and Capua line, 5,000 men are at work to extend it to the Roman frontier. It is positively stated that at the commencement of 1859, the line from Naples to Ceprano will be completed. Then one can travel from Rome to Velletri by rail, Velletri to Ceprano by diligence, and from Ceprano to Naples by rail; thus being in Rome and Naples on the same day.

A Hollando-Franco-Belgian Company has applied (without demanding any subvention) to the Government of the Netherlands for a concession of the line from Utrecht to Zwoll, by Amersfoort, Nykerk, and Hardwigk.

The wrought-iron bridge constructed in Belgium for the Seville and Cordova Railway, to be erected at Lora, over the Guadalquivir, has arrived in Spain. The section from Seville to Lora-dal-Rio will be opened to the public in the course of next month (September).

On the Rhenish Railway, the portion between Rémagan and Nettenhans, opposite Neuwied, is entirely completed, and will be open for public traffic on the 15th instant. From the latter point to Coblenz the distance is but small: there are few structures, and the works are so much advanced, that the line can be ready next October. Then the communication between Dusseldorf, Cologne, and Coblentz, will be complete by rail. Thence to Bingen, one of the most picturesque portions of the Rhine, remains to be constructed; and as many difficult works have to be executed, no period is fixed as yet for its completion. From Bingen to Mayence, Ludwigshafen (opposite Manheim), Strasbourg, Bale, and Berne, to the railway, is open for traffic, so that, when the Coblentz and Bingen section is finished, the traveller can proceed by rail from Dusseldorf all along the Rhine to Bale and the north of Switzerland, without a break.

The Victor Emmanuel Railway will be opened on the 15th instant from Aix les Bains to Culoz. This will place St. Jean de Maurienne (near Modane) in communication with Geneva and the north of Europe. From St. Jean to Susa the journey is still by diligence over Mont Cenis. From Susa the rail has been long since completed to Turin and Genoa.

ST. BARTHOLOMEW'S, SYDENHAM.

A new chancel has been recently erected to the Church of St. Bartholomew, being the district parish church of Sydenham, and was consecrated by the Lord Bishop of London, on the 9th instant.

When the church was erected, the revival of Mediæval architecture, after a slumber of more than two centuries, was not out of its infancy, and churches were as often built in a revived Grecian, as they were in a revived Gothic manner. This building was designed in the Gothic of the day by Mr. Lewis Vulliamy, and had broad and lofty nave and aisles, north and south porches, and a tower at the west end of the nave, but no chancel. It is in the Perpendicular style. Mr. Edwin Nash is the architect of the addition which has been made to a very unsatisfactory building. All the works were contracted for by Mr. Myers, of Lambeth.

Mr. Nash says, in a description of his work:—

"The old vestry had been built beyond and against the east wall of the nave, and was entered through it; and this being ecclesiologically bad, and the space that would be gained by its removal being needed, it was at once evident that an enlargement should be attempted here by the formation of a new chancel. The space was small, only 19 feet, including a footpath that skirted the outside of the vestry; and this being quite inadequate, as a length, for any chancel that would bear a due proportion to the rest of the building, it was determined to advance the chancel 16 feet into the old nave, whereby a length of 35 feet would be obtained. This is what has been carried out; so that the former easternmost bay of the nave is now occupied by the new westernmost bay of the chancel, and the aisles on each side of this bay may now be considered as chancel aisles, instead of nave aisles; and a remodelling of these portions was intended both internally and externally, so as to bring them into a degree of harmony with the new work, but funds did not permit the execution of this, and the design materially suffers from its omission: the executed work consists, therefore, solely of a new chancel and vestry, with their respective fittings, and an alteration and enlargement of the gallery at the west end, together with the reredos, and other work forming a memorial, mentioned hereafter. The design embraced a new two-storied south porch, in place of the present insignificant portal; and numerous other improvements were contemplated, together with a chime of three

bells at the least; but the postponement of these has been unavoidable. It may here be noted that proposals were made for a general improvement of the entire church, and that the only impediment thereto seems to have been the cost.

"The chancel is constituted in seven compartments or bays, including a semi-octagonal termination, each bay divided by triple-shafted stone piers, advanced boldly from the wall; and as stone groining could not be introduced, the next best thing to it was adopted, namely, a wooden roof in the form of large moulded and curved ribs, springing from the stone capitals of the piers, three ribs from each pier, one directly across to the centre, and the two others over the window arches; not in imitation of stone groining, which would have been reprehensible, but as true timber work; and round the whole a large cornice runs, and the portions forming the ceiling are divided into panels enriched at the intersections of the mouldings by carved bosses. Circumstances would not admit of a chancel arch in stone, as might be shown by long explanation; moreover, numerous churches in the Perpendicular style are without them, and the internal effect of the junction of the new with the old work would not have been improved by it in this case. There are five large three-light windows, so that very little wall space appears, except over the new arches that have been thrown in between the new chancel and the old aisles. Externally the chancel has bold buttresses and cornice, and embattled parapet, also pinnacles at each angle rising from winged angel corbels bearing shields charged with emblems of our Saviour's Passion."

The stone reredos on the walls of the three eastern bays of the chancel, the new rail in front of the sacrarium, and some decoration of the roof over, and the new painted glass in the east window compose a memorial to the first incumbent of the district, the Rev. Thos. Bowdler.

The railing that marks off the sacrarium is a stout brass rod, with telescopic slide in the centre in place of gates, and is carried upon iron standards, from which spring scroll branches, with brass leaves at the terminations. Four of the five three-light windows of the new chancel (the eastern window wholly fitted, and the others partially) have stained glass in them.

MALTBY CHURCH, YORKSHIRE.

The old church, dedicated to St. Bartholomew, was situated to the south of the very picturesque village of Maltby, in the same valley that contains the ruins of Roche Abbey, and formed one of the objects of interest in the route from Rotherham to that ancient ruin.

The old building, whose site is rapidly being occupied by a new and more extensive edifice, consisted of chancel, nave, south aisles, and south porch, with western tower. The chancel bore evidence of being Norman work. In the tower there are some good examples of herring-bone walling, and the arcade was first pointed without much character; the whole fabric, with its flat nave and chancel roofs, wooden dormered aisles, and wretched modern porch, forming a miserable object outside; its damp walls, high pews, and huge galleries extending nearly to the east end of chancel, making the interior one of the most uncomfortable and ill-arranged churches witnessed in modern days.

The new edifice is designed in the Middle Pointed style, and will consist of chancel, 28 feet by 14 feet, with vestry on north side; transepts to chancel, 15 feet by 15 feet; nave, 45 feet by 19 feet; north and south aisles to same, 45 feet by 10 feet. The total internal length of the church will be 88 feet; total internal width, 45 feet. The height to apex of roof to nave, 40 feet. The roof of nave and transepts is framed without principals, every spar being braced and bolted: that to the aisles is framed with principals, moulded and stopped. The chancel has a counter-arched ceiling of pitched pine, and is divided into panels by moulded ribs. All the seats are to be low open benches, having ornamental cut standards. The chancel will be provided with stalls, and the altar-table raised seven steps above the nave. The reading-desk will be at the west end of stalls, on the north side, and the pulpit on the south side. All the arches are of two orders beaded: that to the chancel is more richly moulded, the inner order being supported by stalk foliage caps, serpentine voluted octagon shafts, and moulded corbels. The south transept opens into the chancel with an arch having a pierced tympanum, resting on a marble shaft, with carved cap. The north transept arch is left open to receive an organ front behind the stalls.

The tower, which at present is without an arch, will be pierced on the east side with an opening of three orders, with dying imposts. There will be a reredos, and the sedilia are formed in the sill of the south window of the sacrarium, the rear arch being divided into three, and supported with marble shafts. The floors of the nave will be laid with Peake's tiles, and the chancel with Minton's or Mawe's, in ornamental patterns. The building, as it will be viewed from the south-east, shows the east gable to be supplied with a five-light window, having circle in the head, containing five smaller circles, cinque foliated. The sacrarium window is a three-light lancet, with tracery in the head. The gabled transept has a circular window, containing three circles cinque foliated, and three trefoils, the whole springing from a moulded sill and weatherings. The aisles are supplied with two-light windows, with quatre-foiled heads, and, together with the other windows, have plate tracery. There is a good supply of plinths, weatherings, and sets-off, but few buttresses. The tower and spire will be rather overpowered by the new building; but it is hoped that funds will be found to add buttresses, and surmount it with a more lofty spire and belfry. There is accommodation for 450 worshippers. The total cost, including old materials, will be about 1,700*l*. Among the principal subscribers is the patron, Lord Scarborough, together with Sir William Eden (who gives part of the stone), the Rev. E. H. Brooksbank, the Rev. George Rollestone (the vicar), Earl Fitzwilliam, Lady Mills, and Mr. Haywood. The sister of the vicar presents the east window of stained glass. The landowners have agreed to pay a rate of 2d. per acre, and the Incorporated Church-Building Society has made the liberal grant of 145*l*. The architect employed is Mr. Philip Boyce; the contractor, Mr. G. Chadwick, of Rotherham: the carver is Mr. Henry Earp. The whole of the works are to be completed by Christmas.

CHURCH-BUILDING NEWS.

Falkingham.—The restoration of Falkingham church is progressing under the superintendence of Mr. Kirk. Many hidden treasures have been brought to light by the removal of the gallery and the unsightly partitions, and the opening of the groined arch of the tower has produced an effect.

East Retford.—The new church and additional burial ground, at Eaton, near Retford, have been consecrated. The church consists of a nave, porch, bell-turret, and spire. It is rebuilt in the Decorated style. The roofs are open timbered, in a series of arches, with braces, &c. The sittings are open benches. The chancel is stalled; and this work and the pulpit, &c. are of carved oak. The west window is of stained glass, given by Mrs. Coupland, the subject being the Crucifixion. The window is in three compartments, with tracery above. In the middle compartment is the Saviour on the cross, with the Saviour's mother, St. John, and Mary Magdalene, at the foot; and in the other compartments, as well as this one, are grouped the Roman soldiers, some on horseback and some on foot, armed with spears and carrying small Roman flags. The tracery above is filled up with cherubim and angels, the dove and the lamb, &c. There is a window opposite the font and porch, with the figures of St. Peter and St. Paul. The chancel is floored with encaustic tiles. The church will accommodate about 130 persons. The "architect and builder" was Mr. George Shaw, of Saddleworth, by whom also the painted and stained windows were executed. The edifice is entirely built of Steetley stone, and was erected by Mr. H. B. Simpson, of Babworth Hall, the owner of the village, at a cost of 1,000*l*. The additional burial ground is 14 perches.

Cambridge.—Two churches are now closed in Cambridge, for the purpose of undergoing renovation. The controversy in the parish of St. Edward, says the local *Chronicle*, has resulted at last in works of considerable extent, and the church at this moment presents a spectacle of desolation. At Little St. Mary's, the process of putting a new roof upon the church is going on.

Market Harborough.—The Rev. F. P. Johnson, the incumbent of the parish church here, intends to fill one of the lights of the east window with stained glass, and two friends have offered to fill two more lights, and a third to fill the tracery with stained glass. There are two other lights to fill. A memorial window to the late Mr. Rowland Rouse is to be placed in the chancel by Mr. Bloxam, of Rugby.

Ashford.—The buildings in connection with the Ashford Cemetery have been commenced by Messrs. Picard and Co. of London, the contractors. The entrance lodge is rising above the foundation: the foundation of the dissenters' chapel is completed; and that of the established church is also in a forward state. A number of workmen are preparing and carving the stone-work ready for use.

Faversham.—The following tenders were received by the Town council, for flinting and executing other alterations to the church tower, according to the plans of Mr. Scott, from Rumsey's bequest:—Kirby, Faversham, £2,241 7*s*.; J. Frost, Rotherhithe, £2,385; Sutton, Walter, and Goodwin, Maidstone, £1,923; Lancefield, Canterbury, £1,922; Sutton and Vaughan, Maidstone, £1,742. The last-named tender was accepted. It included an estimate of £95 for groining the vestibule, but this part of the work it is proposed not to execute.

Dover.—At the latter end of the year 1855, remarks the *South Eastern Gazette* (in reference to a subject not new in the *Builder*), the Archæological Institute addressed an earnest remonstrance to Lord Panmure, then at the head of the War Department, on the desecrated state of the church in Dover Castle, and the appropriation of the Pharos to the use of the Foreign Legion. Lord Panmure returned a courteous reply, regretting the emergency which induced the engineer officers to suffer the misuse of the Pharos, but said that the wrong was repaired, and directions given that the old church should be cleared of coals, and that they should be respected and kept more decently in future. A portion of the nave still serves as a coal-yard. Is this the reason why this national monument, one of peculiar interest, is jealously consigned to the grim charge of a barrack sergeant, and the public debarred admission? A few hundred pounds would build a coal-shed, and restore the church to its legitimate destination as a barrack chapel; for the troops on the Western Heights have been furnished recently with a school-church, while the regiment in the castle has to be marched to the hall of the Maison Dieu (the Guildhall), upwards of a mile distant, to attend Divine service. We shall soon have more to say about this.

Sherborne.—The chancel of the church of St. Mary, Sherborne, was re-opened on the 18th inst. The restorations of this church, as our readers know, have latterly been carried out by Mr. Slater, of London, successor to Mr. Carpenter, who superintended the restoration of the nave. Mr. Slater was called in by Mr. Wingfield Digby, in 1856, to report upon the state of the fabric, and to recommend what should be further done to restore it. Mr. Slater found the structure in a very dilapidated state, the foundations bad, and the groining of the roof exhibiting fissures some three inches wide, and many of the stones loose. The tie-beams were also so decayed at the ends that the tie of the building was dislocated. On the recommendation of Mr. Slater, Mr. Digby determined that the fabric should be put into thorough repair, and gave Mr. Slater *carte blanche* for its restoration. The first step taken was to restore the foundations, and, having secured them by underpinning and filling in concrete, the defects in the drainage were remedied. The roof, having sunk several inches, was raised to its original height, and a new oak roof, covered with lead, put up. The windows and buttresses were next re-built, portions of the old work being used, where available, to identify the new erections with the original. The stalls were restored by Mr. Forsyth, and new ones added. The base of the stalls is formed of a new marble from a quarry on Mr. Digby's estate, and resembling Purbeck. The ascent to the chancel is by marble steps, and the pavement consists of encaustic tiles, executed by the Messrs. Minton, from the old patterns found in the abbey. The sacrarium is separated from the choir by an oaken rail with brass standards on a marble base, and it is paved with mosaic work, composed of different kinds of marbles. A brass candelabrum, 14 feet high, is placed on each side of the altar. The gas jets are fixed in coronæ, which are supported by a twisted brass column, standing on a marble pillar. The reredos, which is of Caen stone, was designed by the late Mr. Carpenter, and executed by Mr. Forsyth. A carved canopy surmounts a representation of the Ascension, three lower panels exhibiting the Last Supper—both being carved in high relief. The panels on each side of the reredos are decorated with scrolls, bearing texts. In the centre of the choir a black marble slab has been placed by Mr. Digby to the memory of his uncle, the late Lord Digby. The decoration of the choir roof during the recent restoration was intrusted to Messrs. Crace. The devices vary in their subjects, and the colouring increases in rich-

ness in the eastern portion over the sacrarium. The large east window is filled with stained glass, designed and executed by Clayton and Bell, of London. It is a Martyr-window, and contains in the tracery the three orders of martyrs, viz.:—1. those of will and deed; 2. those of will but not of deed; 3. those of deed without will; all surrounding the One Divine Martyr, represented as expiring on the cross, in the centre light. The third order are represented by the Holy Innocents, and fill the topmost row of the tracery lights. The second class are immediately beneath, and exhibit six figures, viz. the prophet Daniel, the three youths in the midst of the burning fiery furnace, the Virgin, and St. John the Evangelist. Below these are the third row, containing twelve figures of the first order of martyrs. In the body of the window the subjects are grouped in six triplets. The three central top lights are occupied by the Crucifixion. The subjects are arranged in the following order:—In the lower tier,—Entry to Jerusalem. Agony and Betrayal. Ecce Homo! In the upper tier,—Bearing the Cross. Crucifixion. Resurrection. The six large windows of the clerestory are filled with subject-glass by the same artists. The upper tier of lights in these is filled with figures of saints, martyrs, and worthies of the Church; while the lower tier contains bishops and abbots of Sherborne. There has been expended in the nave and tower a sum approaching to 14,000*l.* The amount already expended on the chancel is 12,511*l.*, so that the whole of the more recent restorations have cost nearly 27,000*l.*

Williton.—The chapel at Williton has been re-opened, after having undergone restoration. The old church consisted of a nave, chancel, and south aisle. A new aisle has been added on the north, also aisles on either side of the chancel, in which children sit. There are new roofs to the nave and chancel, and the church is entirely re-seated with low seats. The turret at the west end of the nave is about 60 feet high, and is surmounted by an iron cross. The architect employed was Mr. C. E. Giles, of Taunton. The whole of the new work is in the style which prevailed in the early part of the fourteenth century.

Kidderminster.—The new Roman Catholic church erected instead of the old one has been opened. The architect and designer of the altar was Mr. Gilbert Blount, of London. Mr. Woollams, the builder, failed during the erection of the edifice, which has been completed by Mr. Henry Ankrett, of Kidderminster, at a cost, in round numbers, of 2,400*l.* It is built of red and black bricks, faced with Bath stone; sacristy, porch, and tower lighted with aisle and clerestory windows in the early manner of the Decorative style. The roof is of open timber work, and 40 feet high. The church will seat 600, and hold, upon occasions, 1,000 persons. The altar was carved by Mr. William Farmer, of London, in Caen stone. The reredos has carvings of "The Last Supper," and the charge to Peter, "Feed my Lambs." The altar front is of the same material, divided by black marble pillars, representing "Abraham's first Sacrifice in Canaan," "Melchizedek blessing Bread and Wine," and "Abraham offering Isaac." The seats are open-backed, and were made by Mr. Ankrett, of Kidderminster. The gas fittings were furnished by Hardman, of Birmingham.

Worcester.—St. Peter's church, which is only twenty years old, is now closed, in consequence of the imminent danger that is said to exist of the roof falling in. One of the cornices had already fallen. The building, says the *Worcester Chronicle*, appears to have been constructed in a very faulty manner, ensuring neither strength nor durability. A vestry meeting was held on Tuesday in last week, to consider the subject, when there was placed upon the table the end of one of the beams which contributed to the support of the roof. The end which entered the wall was completely rotten: it was stated by Mr. Perkins (architect) to be affected with dry-rot, caused by the dampness of the wood on erection, and the subsequent absence of ventilation. The chairman read the report of Mr. Perkins, which stated that the walls were weak, and in consequence of the wall-plate not being continuous, the building was in a very dangerous state. In order to effect a substantial repair, all decayed timber should, as far as practicable, be removed. The decayed ends of the principal beams should be cut off as far as might be done with safety, and a continuous wall-plate inserted, the whole to be done with best Baltic timber, except the short beams, which should be replaced with English oak. In addition to this Mr. Perkins recommended the insertion of a continuous chain of wrought iron to connect the principals properly together; the ends of the timber to be washed with a solution, to prevent rotting, and proper ventilation to be ensured; and the gutter to be laid upon a bed of sand and clay; the whole to cost about 85*l.* A long and desultory conversation took place, chiefly on the question whether sufficient strength would be retained to support the roof after the rotten ends were cut from the beams. It appeared that 9 inches would have to be cut off, leaving only 4 inches upon the wall, which was thought by some to be insufficient. It was then resolved that other advice be obtained upon the matter, and a motion followed to the effect that Mr. Flewitt be empowered to inspect the state of the roof, and report. Another meeting is to be held shortly on the subject.

Kilvey.—The Swansea *Cambrian* states that it having been determined to enlarge the district church of Kilvey, in order to comply with the demand for increased accommodation, Mr. R. Kyrke Penson was instructed to prepare the necessary plans. The enlargement is intended to be effected by the erection of a new south aisle, and the re-arrangement of a portion of the present seats. Tenders for the execution of the several works have been received from Mr. Joseph Richards, and Mr. W. Rayner, of Swansea, and Messrs. Gough and Richards, of Kilvey; and the committee have decided upon accepting that of Mr. Rayner, which amounts to about 550*l.*

Menai-town.—The new parish church of St. Tysilio has been consecrated. The land was given by the late Marquis of Anglesey. The church consists of a nave, 63 feet by 24 feet 4 inches; chancel, 25 feet 9 inches by 15 feet 9 inches, attained by three steps (internal dimensions); a western tower, finished with pinnacles at each angle, and a stair turret on the south-west angle; south porch, and robing-room on north side of chancel. The style adopted is the late Second Pointed. The building will accommodate 343 persons, at a cost of about 1,450*l.* The roofs are open timbered, and stained dark, while the fittings are stained of a lighter shade, to show the grain of the timber. The sittings are open throughout. In the tracery of the east window the centre forms three mitres. The ground stage of the tower has been thrown into the church by means of a western arch, and contains the organ. The works have been carried out by Mr. Richard Parry, builder, Menai-bridge, from designs and under the superintendence of Mr. H. Kennedy, of Bangor, architect. The carving has been executed by Mr. Evans.

Garstang.—The Roman Catholic Church of St. Mary and St. Michael, newly erected at Bonds, Garstang, has been opened. The church, in which sittings are provided for 650 persons, consists of nave, 77 feet by 26 feet 6 inches, divided by an arcade of five arches from a north aisle of the same length, and 18 feet 6 inches wide; chancel, 23 feet by 26 feet 6 inches; lady chapel, separated from aisle and chancel by an arch, and western tower, 22 feet 6 inches square, and 61 feet high. It is in the Geometric style, from a design furnished by Mr. Paley, architect. The building on plan and without the tower is a parallelogram, 100 feet long by 46 feet broad, and is divided by columns and arches. A window of five lights, filled with tracery, occupies the east wall. The tower opens into the church by an archway, and is so arranged that the organ and choir are placed in a gallery, without obstructing the view of the western window. The nave and aisle are of the same height, and covered with ridge roofs, the constructive timbers being ornamented. On the south side of the chancel is placed the sacristy, communicating with the church and joining the presbytery, which is designed in character with the church. The church and presbytery are built of freestone, from quarries in the neighbourhood; and the contracts were taken for about 3,000*l.* by Messrs. Harrison, Wilson, and Walker, of Lancaster, and Mr. Waterhouse, of Garstang. The schools and master's house are placed at a distance from the church, facing the road from Garstang to Greenhalgh Castle, and consist of two principal rooms, each 40 feet by 18 feet, with entrance porches, open roof, &c.: they are constructed chiefly of brick, with stone dressings to the windows, &c.

THE BRICKMAKERS OF BIRMINGHAM.—The secretary of an "Operative Brickmakers' Association" at Birmingham, has been sentenced, by the magistrates at West Bromwich, to imprisonment in the House of Correction for six weeks, for an attempt to intimidate a master brick manufacturer, at Greet's-green, in the conduct of his business.

WORKHOUSE BUILDINGS FOR MILE-END OLD-TOWN.

MILE-END OLD-TOWN, like some of the other villages round London, has become an important place, and its estimated population is now 56,000. The first rate-book preserved, shows that a rate of 10½d. in the pound raised 164*l.* The same rate now realises 7,000*l.* In 1857 the hamlet was separated from the Stepney Union, and one condition made by the Poor-Law Commissioners was, that a new workhouse should be erected. The trustees have purchased an eligible site in the Globe-fields, between the Eastern Counties Railway and the Mile-end-road, consisting of 7½ acres. The soil, like nearly the whole of the parish, is gravel, thus compensating for its low level. The tenders for the building varied between 34,000*l.* and 25,000*l.* the latter sum being 5,000*l.* above the desired amount, we understand; but after several modifications, the builders have undertaken the works at 20,258*l.* The building will be calculated to give accommodation to 500 adults, with schools for 300 children, an infirmary, receiving wards, &c.

The buildings are in the Tudor style of architecture, and are to be faced with red bricks, relieved by black glazed headers in patterns, and with Suffolk brick dressing to the doors and windows. For the principal entrances to the workhouse, oriel windows, copings to gables, &c. Bath stone will be used. The whole of the corridors and staircases throughout are of York stone. The plans have been arranged with a view to enable the masters and matrons of the various buildings to exercise at all times a *surveillance* over the inmates.

The poor on the books are 117 males, 196 females, and 229 children. The house occupied as a poor-house in 1770 had been the residence of the father of Bishop Thirlwall, and was rented at 30*l.* per annum.

The architect of the new buildings is Mr. William Dobson; the builders, Messrs. Ayers, of Dover. Mr. Foster is clerk of the works. The first stone was laid by Spencer Charrington, Esq. chairman of the Board of Guardians, on Monday last. The prayer was offered up by the Rev. J. G. Dreffield, rector of Bow.

A cold collation, very tastefully laid out in the carpenters' temporary workshop, was done ample justice to by a very respectable assemblage. The amount required has been raised on the security of the rates, the first 18,000*l.* at 4½ per cent. and the remainder at 4½.

"CONTRACT" AND "CONTRACTOR."

THE part last issued of the Architectural Publication Society's "Dictionary of Architecture" contains two articles under the above headings which may be usefully circulated, whether for the information they contain or as examples of the manner in which the work is being prosecuted.

Contract.—The agreement by which a person undertakes to supply labour or materials, or to execute a particular work, for a presumed adequate remuneration. A contract should be *under seal*, but is often *verbal*, or reduced to writing; and even in the case of simple contracts they may be either *expressed* or *implied*; but it is essential to all contracts or agreements that there should be a reciprocal and mutual assent of two or more persons, competent to contract, a good and valid consideration, a thing to be done which is strictly lawful, and a time stated to be the essence of the contract. It must be evident that the preparation of a written contract and its proper execution are matters which belong to the profession of law, and not to that of architecture: a solicitor therefore should draw up the contract, for which the architect should specify the conditions that are requisite, in his opinion, to a just completion of the work. Some of the conditions which might be desirable are given by Gwilt, "Encyclopædia," 8vo. London, 1842, p. 619; Bartholomew, "Specifications," &c. 8vo. London, 1846; and Walker, "Architectural Precedents," third edition, 8vo. London, 1847. Probably from the solicitors' use of the word specify, many practitioners have fallen into the error of appending to their specifications not only those conditions which are called general clauses, but also the legal agreements to perform the works, to pay the price, &c. In consequence the architect becomes liable, if he charge or be paid for such service, not only to a heavy penalty, but also to an action on the part of the client, should a flaw occur in the contract by which a loss is sustained: the validity of the standard provision for penalties, as liquidated damages, has been contested; and the written order of the client for these clauses will not exonerate the architect from

the responsibilities. Another general mistake is the omission to name some qualified person to give notices, take possession, or do other legal acts; a position too often assumed, to his own damage, by the architect. So far as the architect is concerned, it is important that the drawings and specifications he prepares for the purpose of furnishing the elements of a contract should contain every indication required for a clear explanation of the works proposed to be performed, and that every work which may be essential to the execution of the design should be previously indicated in the same manner in both drawings and specifications. This is more particularly important when the contract is to be for a "lump" sum without a condition respecting omissions, additions, &c. because in fact any deviation, however slight, from the contract in such case destroys it. When the contract is for the execution of works upon what is called a "schedule of prices," there is not the same necessity for extreme preliminary caution in preparing the drawings; although of course there would be less ground for possible objection on the score of increased value, if the original documents should contain the fullest and most correct details. The province of the architect with respect to a contract is to explain the intended works in all their mechanical details so clearly and distinctly that even unprofessional parties should be able to understand them before the contract is signed, and after that event to watch carefully over their execution: this province constitutes one of the most important and delicate of the architect's duties, and requires great practical acquaintance with both men and things. After all, the best security for the fulfilment of a contract consists in the good faith of the parties contracting, and of the architect who is their umpire. Blackstone, "Commentaries," edition 1825; Elmes, "Architectural Jurisprudence," 8vo. 1827; Addison, "Law of Contracts," fourth edition, 8vo. 1857; Gibbons, "Law of Contracts," &c. 12mo. 1857; Chitty, "Contracts," 1857; and the articles in the *Builder* journal, 1856, xiv. 296, 342, 352.

The following general covenants, usually introduced into building contracts, consist of such as are necessary on the part of the contractor, on the part of the employer, and for mutual protection; of course under special circumstances special covenants are introduced:—

The builder to provide all labour, implements, materials, carriage, and scaffolding, as well as measuring rods, &c. and to set out work at his own expense.

To give all necessary notices, and pay all fees.

To make good all damage to adjoining properties arising from the works to be executed.

To perform all the works in the specification, in the best manner, and with the best materials, in accordance with the specification and under the direction, and to the satisfaction, of the architect.

To underlet no portion of the work (this may occasionally require modification).

To alter any works, defective or otherwise, within a certain time after notice has been given.

The employer or his architect to have the power of making any omissions, alterations, or additions, without vitiating the contract; the amount for such alterations to be assessed by the architect, and to be added to, or deducted from, the contract sum.

That no works are to be considered as extra or as additional to the contract unless ordered in writing.

That any work described in either specification or drawings, though not in both, be executed as if described in both.

That the detail drawings be followed in preference to the general drawings, and the figures in preference to the scale.

That any work implied by the nature of the work, though omitted to be described, be executed as if specified.

That any disputed point be decided by the architect. This is sometimes more fairly drawn, that any dispute be referred to two disinterested parties or their referee.

That should the progress of any of the works be delayed unnecessarily, or be executed in an improper manner, the employer or his architect have the power of employing other workmen, and of pulling down works, the costs or other damages to be assessed by the architect, and deducted from moneys due to the builder; or if none due, then to be paid by the builder.

That the works be completed within a specified time, on payment of a penalty for every day the works remain incomplete beyond such date. Sometimes the employer will give a sum per day for the works being executed prior to the specified date. The employer to have the power of carrying on the works after the specified time, upon so many days' notice to the builder, and of deducting the expenses from any amounts due to the builder.

That a proportion of the amount for executing the work be paid at stipulated periods on the certificates of the architect.

Recent frauds on the part of certain contractors suggest the propriety of introducing a clause to guard these certificates against covering any wilful or fraudulent deviation from the contract.

Special clauses are occasionally necessary; such as, to enable the architect to appoint persons of his own choice for executing such works as carving, modelling, painting, &c. as require to be executed in a superior or artistic manner, to be included in the contract, and paid for by the builder.

The following list comprises most of the known English Mediæval contracts, some of which include specifications: some notices of the existence of foreign Mediæval contracts might be collected upon a careful investigation of provincial and local histories.

Buildings in thirteenth and fourteenth centuries—*A Brief Account of Durham Cathedral*, 1833.

1314. House at Lapworth—Parker, *Domestic Arch.* 5.

1395. Masonry of Westminster Hall—Rymer, *Fœdera*, edit. 1709, vii. 794.

1395. Tomb of Richard II.—Rymer, *Fœdera*, 795; Gough, *Sepulchral Mons.* i. 167.

1401. Dormitory at Durham—*A Brief Account*, &c.

1412. Catterick Church, Yorkshire—Salvin and Raine, *Descr. of C. Ch.* 1834.

1421. Bridge at Catterick—Referred to in Whitaker, *Richmondshire*, ii. 27.

1438. Fotheringay Church, Northamptonshire—Dugdale, *Monasticon*, iii. 162; *Memoirs of the Oxford Society*, 1841.

1439. Chapel fittings and tomb, Beauchamp Chapel, Warwick—Britton, *Arch. Antiq.* iv.; Dugdale, *Warwick*, ed. 1656, 329; Blore, *Mont. Rem.* &c.

1440. Eton College, Buckinghamshire—Britton, *Arch. Antiquities*, ii. 99; Nichols, *Royal Wills*, &c.

1450 and 1526. King's College Chapel, Cambridge—Malden, *Hist.* 1769; Britton, *Arch. Antiq.* i; Le Keux, *Memorials*, ii.

1470. A jesse altar, St. Cuthbert's Church, Wells—*Builder* Journal, xv. 326.

1471. Choir of Frieburg Minster—*Builder* Journal, viii. 183.

1484. A timber house at Kirlington, Yorkshire—Whitaker, *Richmondshire*, ii. 146.

1484. Carpentry for the chapel and school of Waynflete, Lincolnshire—Chandler, *Life of Waynflete*, 369.

1496. Rood-loft, Merton College Chapel, Oxford—*Archæological Journal*, ii. 181.

1492. Roof of great tower, Magdalen College, Oxford—Chandler, *Life of Waynflete*, 367, 398.

1506. Vaulting of a choir of St. George's Chapel, Windsor, Berks—Referred to in Ashmole, *Hist. of the Garter*, 126.

1516. Tomb of Henry VII. at Westminster—Speed, *Hist.* 1037-8; Britton, *Arch. Antiq.* ii.; Ackermann, *Westm. Ab.*, ii. 149.

1525 and 1538. Erection of Hengrave Hall, Norfolk—Gage, *Hist.* 41; Hunt, *Tudor Arch.* 19.

1583. Burnley Church, Lancashire—Whitaker, *Hist. of Whalley*, &c. 296.

1714. Great Yarmouth Church, Norfolk—Preston, *Hist. of Yarmouth*, 23.

Perhaps "the first *bonâ fide* contract for a building entered into in London was that for Drury-lane Theatre, 1811; but the hospital at Yarmouth, and a barrack at Hampton Court, had been done somewhat earlier" (*Builder* Journal, xiii. 437): that is to say, the Commissioners of Military Inquiry, 1806 (Report, iv. 226), give the form of contracts for barracks settled in January, 1805, and pp. 427-34, the list of the contract and other works.

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The opposition of established companies to each other, the formation of branch lines to places which have neither sufficient population nor trade to pay

* In the United States of America there are 174 railways, of which twenty-two are in progress of construction: fifty-eight only pay dividends of from two to seven and a half per cent. per annum. The longest road is the New York Central—337 miles; total cost, 32,000,000 dollars, and the last dividend eight per cent; and the shortest is the Erie and North-east,—twenty miles; cost 750,000 dollars, and dividend ten per cent.

even, in some instances, the working expenses,—these and other circumstances render it necessary that shareholders should at once carefully consider their position; for it is to be feared that, in too many cases, the opposition which is at present raging, and swamping large interests, is to some extent promoted by the rival feelings of managers. The disputes, so damaging to all concerned, should, if possible, be brought to a close, and the actual condition of each company put in a proper and true light; for it will be better to know the worst than to keep up trimming measures which will end in magnified difficulties.

If the evil be boldly tackled, and affairs put (if even in a less showy) in a clear and honest position, and careful yet sufficient cost of working allowed, there will be hope of amendment; for the population, the trade, manufactures, and other resources of the country will surely year by year increase, and the profits gradually increase in proportion, if the strife of contending factions can be stayed, and a fair and wise system of business management adopted, the present conduct of some of the lines is frightfully defective.

NEW STATION ON NORTH-KENT LINE.

BELVEDERE.

The first stone of a new station on the North-Kent line was laid on Thursday, the 19th, by Lady Eardley, who was accompanied by Sir Culling Eardley, and several friends.

The station, which is named "Belvedere," is to be erected mainly at the expense of Sir Culling Eardley, who has thrown open many eligible spots for villa residences, nearly fifty of which are already in course of erection. The station will be completed in the course of two months, and is situated midway between Abbey Wood and Erith stations.

The new town that is arising here is upon the property of Sir Culling Eardley, and is designed and being carried out under the superintendence of the architects, Messrs. W. G. and E. Habershon.

RAILWAY STATIONS, AND THEIR NAMES ON THE PORTERS' HATS.

Would it not be a regulation convenient to the public that the name of each station should be conspicuously affixed in front of the hats of the officials throughout the lines of our railways? Every traveller must have noticed the strange transformation which these names undergo in the mouths of the railway guards and porters, so as really in many cases to be unintelligible. These having to pronounce the words so often, hit upon that mode which is most easy, perhaps, for them to repeat, but by no means for the passengers to understand! If the name of a station, for instance, happens to end with a "ton," it is very usual to get only, in the way of information, as the official passes hurriedly by the carriage in which the passenger is, an indistinguishable mumble in the first place, and then the "ton" pronounced with marked emphasis! which, as so many names of places end so, is not calculated to convey much information. Also, the names of many places are not pronounced as they are spelt (Cirencester, for instance, is pronounced Cisiter), and the time afforded for inquiry, by the short stoppages by some trains, is hardly enough sometimes for the passenger to obtain the information of whether or no he really has arrived at the place at which he wants to stop. Now, all this not only occasions needless anxiety to travellers in general, and to "unprotected females" in particular, but occasionally no doubt leads to passengers being carried beyond their destination. This might, it occurs to me, be mainly and easily obviated by the officials and porters, having the names of their stations placed conspicuously on their hats; these names being either painted on the front of their hats, or affixed with an elastic band, so as to be easy of removal when the official is off duty.

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THE LONDON DOCKS.

The new Shadwell entrance to the London Docks is fast approaching completion.

From the new bridges of Fox or New Gravel-lanes may be seen, when the plates of the machinery-pits are off, the mysterious levers, pulleys, hydraulic rams and their appendages, henceforth destined to open the dock-gates.

Care has been taken with these gates, not only in the choice of timber, but in the workmanship, under the superintendence of Mr. Samuel Speke-man. They are constructed of beams and timbers of sound English oak, green heart, and pitch pine, all of which has been duly seasoned with creosote, and laid by in the same manner as timber in the process of seasoning for ships of war.

Each of these gates (there are six) cannot be less in weight than 140 tons—a strange backful, one would imagine, for a modern Sampson to struggle under.

The bridges of iron were constructed by W. G. Armstrong, under the superintendence of Mr. Thompson. Dock-bridges hitherto, have been parted in the middle, presenting two closing wings midway across the water space. This old-fashioned mode, however, is done away with under Mr. Armstrong's patent, as each bridge presents one moving platform of light structure.

Each of these bridges works on a drum-head opening with a sort of rule joint.

THE MASTER BUILDERS AND THEIR WORKMEN.

The following paper, it will be remembered, was recently issued to the building trade:—

"At an aggregate meeting of the trade, held in Exeter-hall, on June 3rd, 1858, it was unanimously resolved that a memorial should be presented to you, asking you to reduce the hours of labour from ten to nine hours per day, *with the present rate of wages*.

The reason why we ask this of you is, we believe the time has come when there must be a better equalization of the hours of labour, in consequence of the great increase both of population and machinery: we are not opposed to machinery, but we are of opinion that the working classes ought to reap some benefit from its extensive introduction, and the benefit we wish is a mitigation of the hours of labour.

We also think that reducing our labour one hour per day would be a great boon to society in general, and would have a beneficial tendency to those employed, in promoting their *moral and social condition*.

Gentlemen,—The object of this Memorial is to respectfully request you to concede to us the privilege of working nine hours per day instead of ten (as at present). We wish this alteration to take place without any diminution in the present rate of wages. Should you grant us this boon, it will produce and promote a better feeling between employer and employed, for long hours of labour is detrimental to both. Hoping you will consider this question as employers of labour belonging to a great country which is held up as a model for the admiration of the world."

On Thursday last, by appointment, the masters met to receive a deputation on the subject, and, after consideration, came to the following resolutions:—

"That the question, although raised by the carpenters and joiners, is really a question involving all trades.

That, inasmuch as there is no compulsion by which workmen are obliged to labour for any given number of hours, it really only amounts to an alteration in the rate of wages.

That within the last four or five years the price of skilled labour has been advanced 10 per cent.; and that it does not appear to this meeting that there is anything in the circumstances of the present times to warrant a farther increase to the extent suggested.

That, looking at the very large amount of the interest involved, not only as it regards the building trades, but obviously even beyond these bounds, this meeting do not feel that they can accede to the request made, and they come to this resolution with the best possible feeling of goodwill towards the workmen; and they are bound to say that the manner in which this question has been brought forward and discussed is very creditable to those who have appeared as its advocates.

G. Wales, Secretary Builders' Society."

PROPOSAL FOR THE COLLECTION OF AUTHENTIC COPIES OF MONUMENTAL INSCRIPTIONS.

The value of monumental inscriptions, as containing evidence applicable to the purposes of the historian, the genealogist, the biographer, and in fact of all historical inquirers, is too obvious to need enforcement. Although generally inscribed on the most durable materials, they are in no degree exempt from the action of the ordinary agents of destruction. There are even some perils to which they are peculiarly exposed. Valuable memorials, which have defied time, fire, and damp, the ravages of civil warfare and the recklessness of the restorer, have yielded at last to the carelessness or the ignorance of parochial authorities. Of the inscriptions published by Weever, Le Neve, and other collectors of this class of historical monuments, it is astonishing how many of the originals cannot now be found. In the present day the work of destruction is proceeding at an accelerated pace. The recent alterations in the law of interments operate most fatally against this class of historical evidences, and in a few years the loss of historical and genealogical materials from this source alone will be found to be not only most extensive, but of an irreparable character.

The Society of Antiquaries of London, not having been successful in inducing the Government to take measures for arresting this serious and growing evil, desire to provide a partial remedy by establishing a registry of all properly-authenticated copies of inscriptions; and with this view propose to collect such copies in the following manner, viz.:—

To receive all copies of monumental inscriptions, authenticated to the satisfaction of the committee appointed by the society for this purpose, which may be sent to them free of expense.

Rubbings, photographs, engravings, etchings, and lithographs will be received as copies. Written copies should be in a clear and legible handwriting, and upon foolscap of the ordinary size. The paper should be written on one side only, and with a clear space between each inscription. It is indispensable that it should appear on the copy whether it be derived from the original monument or from any transcript or other source.

Such copies, and all rubbings, photographs, &c. of monuments and monumental inscriptions, will be kept in the apartments of the society in Somerset House, London, or some other suitable place of deposit, and will be arranged and indexed.

It is hoped that eventually arrangements may be made for rendering the index and inscriptions accessible to the public generally.

The Society of Antiquaries invite the co-operation not only of all their members, but of all possessors of rubbings, photographs, or other copies of monumental inscriptions, or drawings, &c. of monuments. It is obvious that the value of such a collection will mainly depend upon its extent and accuracy.

Copies and communications upon this subject should be addressed to "The Society of Antiquaries, Somerset House, London;" and it will be convenient if the subject of the communication be indicated by the word "Inscriptions" written on the envelope. Information respecting curious or valuable inscriptions, especially if in any state of decay or danger, will be thankfully received.

CHOKED DRAINS AND DISINFECTING AGENTS.

Having lately had the misfortune to live in a house in which the drain had become choked, owing to some roughness and imperfection in the joining of the pipes, the passage had become stopped and offensive matters flowed under the floors of the kitchen and washhouse. When the workmen began to remedy this matter, it was found that to the depth of 4 feet the soil was impregnated with refuse from the closet, a large quantity of which it was necessary to carry away and bury in the garden. The smell was most offensive; and it was remarkable, that although numerous children and an invalid were living close by, no advantage was taken of those cheap deodorizing materials which would to some extent have lessened the evil. I have in other instances noticed the extreme carelessness of a certain class of workmen in this respect, and that even if the materials have been supplied by a person living in a house which is thus unfortunately situated, no care is taken properly to apply them, unless they are watchfully looked after—a task by no means pleasant to those who are accustomed to such operations, and also stimulated by sundry pots of ale.

In order, however, to counteract the effect of these gases, I had chloride of lime mixed in vessels of water in all the rooms and passages; but I found, however, that the children, my wife, and self, were effected by a peculiar dryness and soreness of the throat and a violent headache, which I was at first inclined to attribute to the opening of the drain: when, however, this offensive cause had ceased, for the sake of experiment I continued for a time the use of the chloride of lime, and also the chloride of zinc, and found the headache, &c. to continue. Thinking that many of your readers have been and will be circumstanced in the same manner, I submit these particulars to you, thinking that the hint may be useful, and that some chemical correspondent may enlighten those who require the use of these and other disinfecting agents, as to what extent (if any) these agents may have an ill effect upon health when used in bedrooms, &c. It may be, that, in my anxiety to destroy the effluvia from the drain, I used the mixtures too strong: this, however, is a kind of sanitary knowledge which is not generally understood; and I hope that this communication may be the means of, in some degree, giving information which will be useful to the public.

Londoner.

the responsibilities. Another general mistake is the omission to name some qualified person to give notices, take possession, or do other legal acts; a position too often assumed, to his own damage, by the architect. So far as the architect is concerned, it is important that the drawings and specifications he prepares for the purpose of furnishing the elements of a contract should contain every indication required for a clear explanation of the works proposed to be performed, and that every work which may be essential to the execution of the design should be previously indicated in the same manner in both drawings and specifications. This is more particularly important when the contract is to be for a "lump" sum without a condition respecting omissions, additions, &c. because in fact any deviation, however slight, from the contract in such case destroys it. When the contract is for the execution of works upon what is called a "schedule of prices," there is not the same necessity for extreme preliminary caution in preparing the drawings; although of course there would be less ground for possible objection on the score of increased value, if the original documents should contain the fullest and most correct details. The province of the architect with respect to a contract is to explain the intended works in all their mechanical details so clearly and distinctly that even unprofessional parties should be able to understand them before the contract is signed, and after that event to watch carefully over their execution: this province constitutes one of the most important and delicate of the architect's duties, and requires great practical acquaintance with both men and things. After all, the best security for the fulfilment of a contract consists in the good faith of the parties contracting, and of the architect who is their umpire. Blackstone, "Commentaries," edition 1825; Elmes, "Architectural Jurisprudence," 8vo. 1827; Addison, "Law of Contracts," fourth edition, 8vo. 1857; Gibbons, "Law of Contracts," &c. 12mo. 1857; Chitty, "Contracts," 1857; and the articles in the *Builder* journal, 1856, xiv. 296, 342, 352.

The following general covenants, usually introduced into building contracts, consist of such as are necessary on the part of the contractor, on the part of the employer, and for mutual protection; of course under special circumstances special covenants are introduced:—

The builder to provide all labour, implements, materials, carriage, and scaffolding, as well as measuring rods, &c. and to set out work at his own expense.

To give all necessary notices, and pay all fees.

To make good all damage to adjoining properties arising from the works to be executed.

To perform all the works in the specification, in the best manner, and with the best materials, in accordance with the specification and under the direction, and to the satisfaction, of the architect.

To underlet no portion of the work (this may occasionally require modification).

To alter any works, defective or otherwise, within a certain time after notice has been given.

The employer or his architect to have the power of making any omissions, alterations, or additions, without vitiating the contract; the amount for such alterations to be assessed by the architect, and to be added to, or deducted from, the contract sum.

That no works are to be considered as extra or as additional to the contract unless ordered in writing.

That any work described in either specification or drawings, though not in both, be executed as if described in both.

That the detail drawings be followed in preference to the general drawings, and the figures in preference to the scale.

That any work implied by the nature of the work, though omitted to be described, be executed as if specified.

That any disputed point be decided by the architect. This is sometimes more fairly drawn, that any dispute be referred to two disinterested parties or their referee.

That should the progress of any of the works be delayed unnecessarily, or be executed in an improper manner, the employer or his architect have the power of employing other workmen, and of pulling down works, the costs or other damages to be assessed by the architect, and deducted from moneys due to the builder, or if none due, then to be paid by the builder.

That the works be completed within a specified time, on payment of a penalty for every day the works remain incomplete beyond such date. Sometimes the employer will give a sum per day for the works being executed prior to the specified date. The employer to have the power of carrying on the works after the specified time, upon so many days' notice to the builder, and of deducting the expenses from any amounts due to the builder.

That a proportion of the amount for executing the work be paid at stipulated periods on the certificates of the architect.

Recent frauds on the part of certain contractors suggest the propriety of introducing a clause to guard these certificates against covering any wilful or fraudulent deviation from the contract.

Special clauses are occasionally necessary; such as, to enable the architect to appoint persons of his own choice for executing such works as carving, modelling, painting, &c. as require to be executed in a superior or artistic manner, to be included in the contract, and paid for by the builder.

The following list comprises most of the known English Mediæval contracts, some of which include specifications: some notices of the existence of foreign Mediæval contracts might be collected upon a careful investigation of provincial and local histories.

Buildings in thirteenth and fourteenth centuries—*A Brief Account of Durham Cathedral*, 1833.

1314. House at Lapworth—Parker, *Domestic Arch.* 5.

1395. Masonry of Westminster Hall—Rymer, *Fœdera*, edit. 1709, vii. 794.

1395. Tomb of Richard II.—Rymer, *Fœdera*, 795; Gough, *Sepulchral Mons.* i. 167.

1401. Dormitory at Durham—*A Brief Account*, &c.

1412. Catterick Church, Yorkshire—Salvin and Raine, *Descr. of C. Ch.* 1834.

1421. Bridge at Catterick—Referred to in Whitaker, *Richmondshire*, ii. 27.

1435. Fotheringay Church, Northamptonshire—Dugdale, *Monasticon*, iii. 162; *Memoirs of the Oxford Society*, 1841.

1439. Chapel fittings and tomb, Beauchamp Chapel, Warwick—Britton, *Arch. Antiq.* iv.; Dugdale, *Warwick*, ed. 1656, 329; Bloxe, *Mont. Rem.* &c.

1440. Eton College, Buckinghamshire—Britton, *Arch. Antiquities*, ii. 89; Nichols, *Royal Wills*, &c.

1450 and 1526. King's College Chapel, Cambridge—Malden, *Hist.* 1769; Britton, *Arch. Antiq.* 1; Le Keux, *Memorials*, ii.

1470. A jesse altar, St. Cuthbert's Church, Wells—*Builder* Journal, xv. 326.

1471. Choir of Frieburg Minster—*Builder* Journal, viii. 183.

1484. A timber house at Kirlington, Yorkshire—Whitaker, *Richmondshire*, ii. 146.

1484. Carpentry for the chapel and school of Wayneflete, Lincolnshire—Chandler, *Life of Waynflete*, 369.

1486. Rood-loft, Merton College Chapel, Oxford—*Archæological Journal*, ii. 181.

1492. Roof of great tower, Magdalen College, Oxford—Chandler, *Life of Waynflete*, 367, 398.

1506. Vaulting of a choir of St. George's Chapel, Windsor, Berks—Referred to in Ashmole, *Hist. of the Garter*, 136.

1516. Tomb of Henry VII. at Westminster—Speed, *Hist.* 1037-8; Britton, *Arch. Antiq.* ii.; Ackermann, *Westm. Ab.*, ii. 140.

1525 and 1538. Erection of Hengrave Hall, Norfolk—Gage, *Hist.* 41; Hunt, *Tudor Arch.* 19.

1583. Burnley Church, Lancashire—Whitaker, *Hist. of Whalley*, &c. 298.

1714. Great Yarmouth Church, Norfolk—Preston, *Hist. of Yarmouth*, 23.

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Dividends have been fictitiously kept up by paying them from capital instead of income: necessary repairs have been delayed, and the "penny" thus saved has proved an ultimate "pound" loss; and while those comparatively small and unwise savings have been made, great extravagance and want of thought have been shown in other matters.*

The opposition of established companies to each other, the formation of branch lines to places which have neither sufficient population nor trade to pay

* In the United States of America there are 174 railways, of which twenty-two are in progress of construction: fifty-eight only pay dividends of from two to seven and a half per cent. per annum. The longest road is the New York Central—557 miles; total cost, 32,000,000 dollars, and the last dividend eight per cent; and the shortest is the Erie and North-east,—twenty miles; cost 750,000 dollars, and dividend ten per cent.

even, in some instances, the working expenses,—these and other circumstances render it necessary that shareholders should at once carefully consider their position; for it is to be feared that, in too many cases, the opposition which is at present raging, and swamping large interests, is to some extent promoted by the rival feelings of managers. The disputes, so damaging to all concerned, should, if possible, be brought to a close, and the actual condition of each company put in a proper and true light; for it will be better to know the worst than to keep up trimming measures which will end in magnified difficulties.

If the evil be boldly tackled, and affairs put (if even in a less showy) in a clear and honest position, and careful yet sufficient cost of working allowed, there will be hope of amendment; for the population, the trade, manufactures, and other resources of the country will surely year by year increase, and the profits gradually increase in proportion, if the strife of contending factions can be stayed, and a fair and wise system of business management adopted, the present conduct of some of the lines is frightfully defective.

NEW STATION ON NORTH-KENT LINE.

BELVEDERE.

The first stone of a new station on the North-Kent line was laid on Thursday, the 19th, by Lady Eardley, who was accompanied by Sir Culling Eardley, and several friends.

The station, which is named "Belvedere," is to be erected mainly at the expense of Sir Culling Eardley, who has thrown open many eligible spots for villa residences, nearly fifty of which are already in course of erection. The station will be completed in the course of two months, and is situated midway between Abbey Wood and Erith stations.

The new town that is arising here is upon the property of Sir Culling Eardley, and is designed and being carried out under the superintendence of the architects, Messrs. W. G. and E. Habershon.

RAILWAY STATIONS, AND THEIR NAMES ON THE PORTERS' HATS.

Would it not be a regulation convenient to the public that the name of each station should be conspicuously affixed in front of the hats of the officials throughout the lines of our railways? Every traveller must have noticed the strange transformation which these names undergo in the mouths of the railway guards and porters, so as really in many cases to be unintelligible. These having to pronounce the words so often, hit upon that mode which is most easy, perhaps, for them to repeat, but by no means for the passengers to understand! If the name of a station, for instance, happens to end with a "ton," it is very usual to get only, in the way of information, as the official passes hurriedly by the carriage in which the passenger is, an indistinguishable mumble in the first place, and then the "ton" pronounced with marked emphasis! which, as so many names of places end so, is not calculated to convey much information. Also, the names of many places are not pronounced as they are spelt (Cirencester, for instance, is pronounced Cisiter), and the time afforded for inquiry, by the short stoppages by some trains, is hardly enough sometimes for the passenger to obtain the information of whether or no he really has arrived at the place at which he wants to stop. Now, all this not only occasions needless anxiety to travellers in general, and to "unprotected females" in particular, but occasionally no doubt leads to passengers being carried beyond their destination. This might, it occurs to me, be mainly and easily obviated by the officials and porters, having the names of their stations placed conspicuously on their hats; these names being either painted on the front of their hats, or affixed with an elastic band, so as to be easy of removal when the official is off duty.

Ersilon.

THE LONDON DOCKS.

The new Shadwell entrance to the London Docks is fast approaching completion.

From the new bridges of Fox or New Gravel-lanes may be seen, when the plates of the machinery-pits are off, the mysterious levers, pulleys, hydraulic rams and their appendages, henceforth destined to open the dock-gates.

Care has been taken with these gates, not only in the choice of timber, but in the workmanship, under the superintendence of Mr. Samuel Speke-man. They are constructed of beams and timbers of sound English oak, green heart, and pitch pine, all of which has been duly seasoned with creosote, and laid by in the same manner as timber in the process of seasoning for ships of war.

Each of these gates (there are six) cannot be less in weight than 140 tons—a strange backful, one would imagine, for a modern Sampson to struggle under.

The bridges of iron were constructed by W. G. Armstrong, under the superintendence of Mr. Thompson. Dock-bridges hitherto, have been parted in the middle, presenting two closing wings midway across the water space. This old-fashioned mode, however, is done away with under Mr. Armstrong's patent, as each bridge presents one moving platform of light structure.

Each of these bridges works on a drum-head opening with a sort of rule joint.

THE MASTER BUILDERS AND THEIR WORKMEN.

The following paper, it will be remembered, was recently issued to the building trade:—

"At an aggregate meeting of the trade, held in Exeter-hall, on June 3rd, 1858, it was unanimously resolved that a memorial should be presented to you, asking you to reduce the hours of labour from ten to nine hours per day, *with the present rate of wages*.

The reason why we ask this of you is, we believe the time has come when there must be a better equalisation of the hours of labour, in consequence of the great increase both of population and machinery: we are not opposed to machinery, but we are of opinion that the working classes ought to reap some benefit from its extensive introduction, and the benefit we wish is a mitigation of the hours of labour.

We also think that reducing our labour one hour per day would be a great boon to society in general, and would have a beneficial tendency to those employed, in promoting their *moral and social condition*.

Gentlemen,—The object of this Memorial is to respectfully request you to concede to us the privilege of working nine hours per day instead of ten (as at present). We wish this alteration to take place without any diminution in the present rate of wages. Should you grant us this boon, it will produce and promote a better feeling between employer and employed, for long hours of labour is detrimental to both. Hoping you will consider this question as employers of labour belonging to a great country which is held up as a model for the admiration of the world."

On Thursday last, by appointment, the masters met to receive a deputation on the subject, and, after consideration, came to the following resolutions:—

"That the question, although raised by the carpenters and joiners, is really a question involving all trades.

That, inasmuch as there is no compulsion by which workmen are obliged to labour for any given number of hours, it really only amounts to an alteration in the rate of wages.

That within the last four or five years the price of skilled labour has been advanced 10 per cent.; and that it does not appear to this meeting that there is anything in the circumstances of the present times to warrant a further increase to the extent suggested.

That, looking at the very large amount of the interest involved, not only as it regards the building trades, but obviously even beyond these bounds, this meeting do not feel that they can accede to the request made, and they come to this resolution with the best possible feeling of goodwill towards the workmen; and they are bound to say that the manner in which this question has been brought forward and discussed is very creditable to those who have appeared as its advocates.

G. Wales, Secretary Builders' Society."

PROPOSAL FOR THE COLLECTION OF AUTHENTIC COPIES OF MONUMENTAL INSCRIPTIONS.

The value of monumental inscriptions, as containing evidence applicable to the purposes of the historian, the genealogist, the biographer, and in fact of all historical inquirers, is too obvious to need enforcement. Although generally inscribed on the most durable materials, they are in no degree exempt from the action of the ordinary agents of destruction. There are even some perils to which they are peculiarly exposed. Valuable memorials, which have defied time, fire, and damp, the ravages of civil warfare and the recklessness of the restorer, have yielded at last to the carelessness or the ignorance of parochial authorities. Of the inscriptions published by Weever, Le Neve, and other collectors of this class of historical monuments, it is astonishing how many of the originals cannot now be found. In the present day the work of destruction is proceeding at an accelerated pace. The recent alterations in the law of interments operate most fatally against this class of historical evidences, and in a few years the loss of historical and genealogical materials from this source alone will be found to be not only most extensive, but of an irreparable character.

The Society of Antiquaries of London, not having been successful in inducing the Government to take measures for arresting this serious and growing evil, desire to provide a partial remedy by establishing a registry of all properly-authenticated copies of inscriptions; and with this view propose to collect such copies in the following manner, viz.:—

To receive all copies of monumental inscriptions, authenticated to the satisfaction of the committee appointed by the society for this purpose, which may be sent to them free of expense.

Rubbings, photographs, engravings, etchings, and lithographs will be received as copies. Written copies should be in a clear and legible hand-writing, and upon foolscap of the ordinary size. The paper should be written on one side only, and with a clear space between each inscription. It is indispensable that it should appear on the copy whether it be derived from the original monument or from any transcript or other source.

Such copies, and all rubbings, photographs, &c. of monuments and monumental inscriptions, will be kept in the apartments of the society in Somerset House, London, or some other suitable place of deposit, and will be arranged and indexed.

It is hoped that eventually arrangements may be made for rendering the index and inscriptions accessible to the public generally.

The Society of Antiquaries invite the co-operation not only of all their members, but of all possessors of rubbings, photographs, or other copies of monumental inscriptions, or drawings, &c. of monuments. It is obvious that the value of such a collection will mainly depend upon its extent and accuracy.

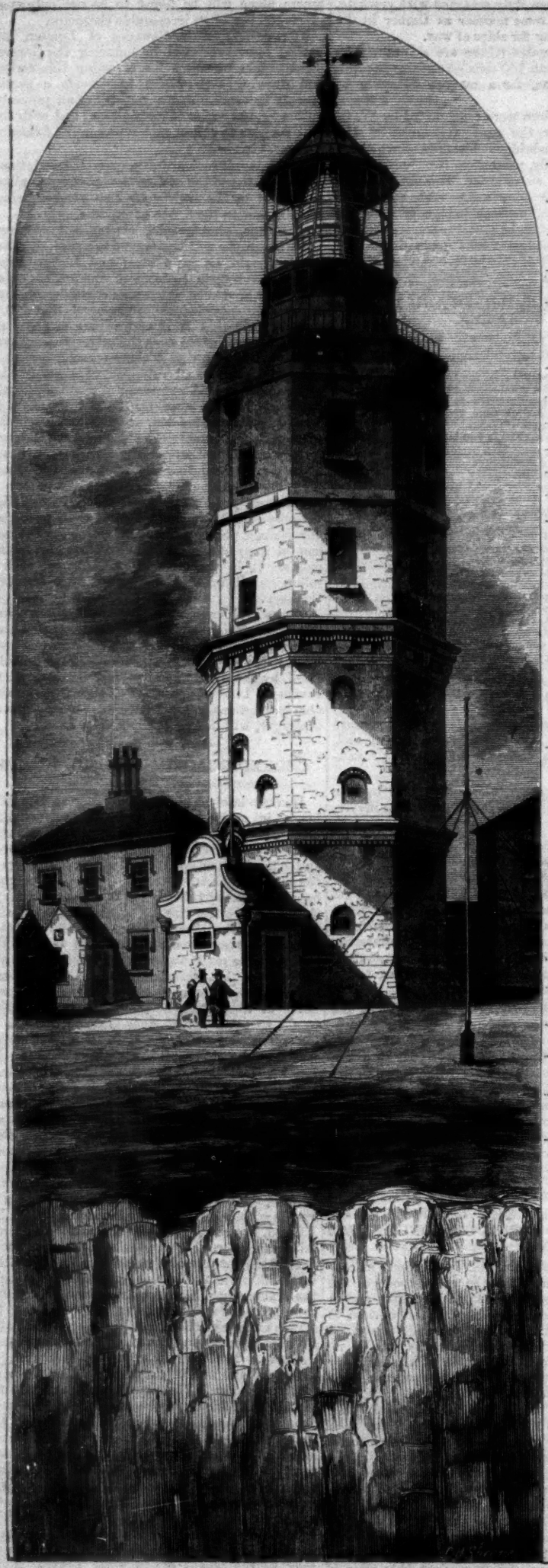
Copies and communications upon this subject should be addressed to "The Society of Antiquaries, Somerset House, London;" and it will be convenient if the subject of the communication be indicated by the word "Inscriptions" written on the envelope. Information respecting curious or valuable inscriptions, especially if in any state of decay or danger, will be thankfully received.

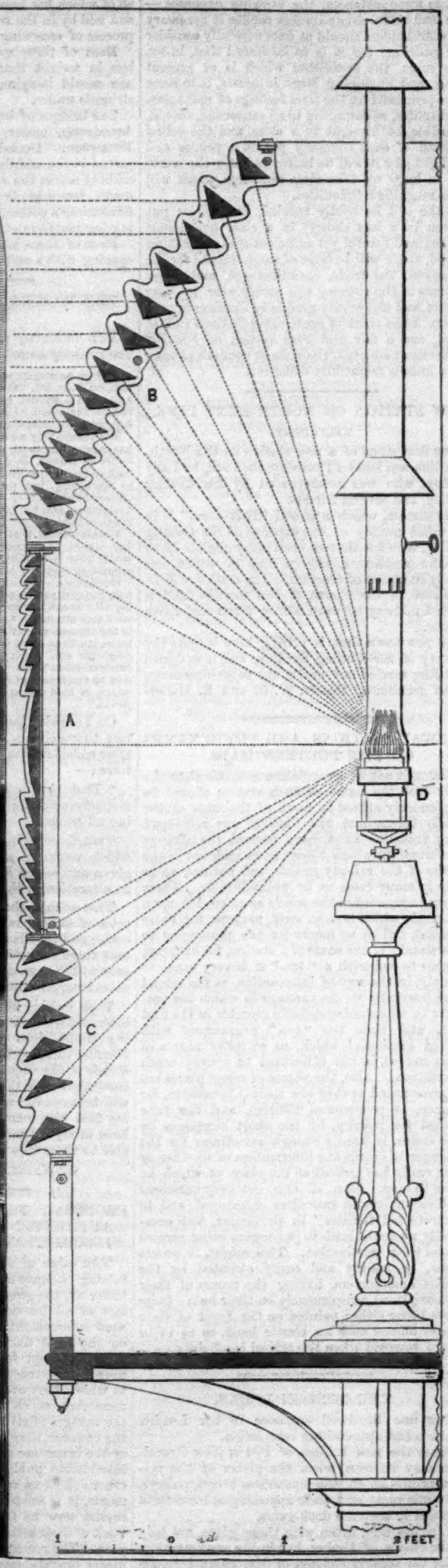
CHOKED DRAINS AND DISINFECTING AGENTS.

Having lately had the misfortune to live in a house in which the drain had become choked, owing to some roughness and imperfection in the joining of the pipes, the passage had become stopped and offensive matters flowed under the floors of the kitchen and washhouse. When the workmen began to remedy this matter, it was found that to the depth of 4 feet the soil was impregnated with refuse from the closet, a large quantity of which it was necessary to carry away and bury in the garden. The smell was most offensive; and it was remarkable, that although numerous children and an invalid were living close by, no advantage was taken of those cheap deodorizing materials which would to some extent have lessened the evil. I have in other instances noticed the extreme carelessness of a certain class of workmen in this respect, and that even if the materials have been supplied by a person living in a house which is thus unfortunately situated, no care is taken properly to apply them, unless they are watchfully looked after—a task by no means pleasant to those who are accustomed to such operations, and also stimulated by sundry pots of ale.

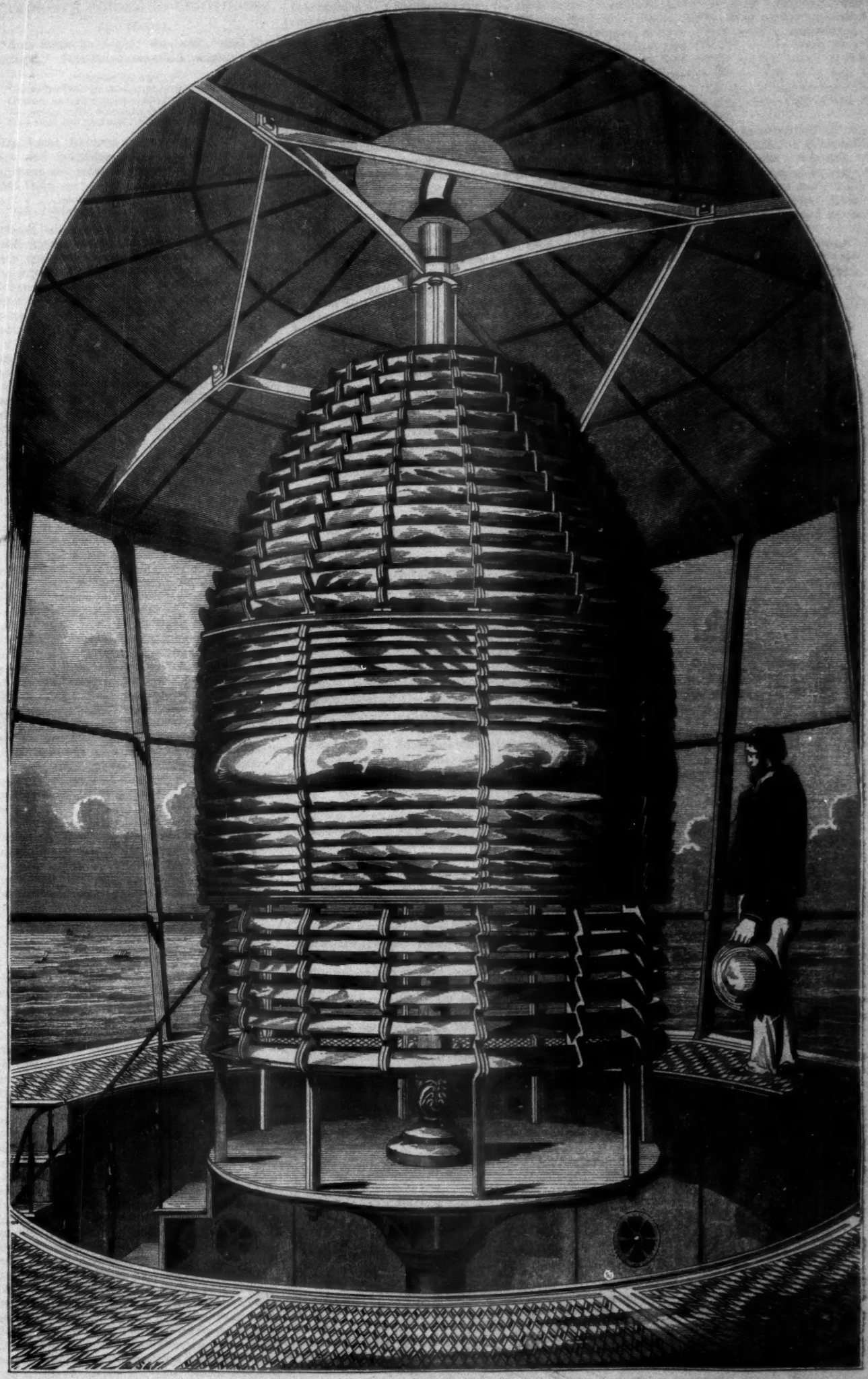
In order, however, to counteract the effect of these gases, I had chloride of lime mixed in vessels of water in all the rooms and passages; but I found, however, that the children, my wife, and self, were effected by a peculiar dryness and soreness of the throat and a violent headache, which I was at first inclined to attribute to the opening of the drain: when, however, this offensive cause had ceased, for the sake of experiment I continued for a time the use of the chloride of lime, and also the chloride of zinc, and found the headache, &c. to continue. Thinking that many of your readers have been and will be circumstanced in the same manner, I submit these particulars to you, thinking that the hint may be useful, and that some chemical correspondent may enlighten those who require the use of these and other disinfecting agents, as to what extent (if any) these agents may have an ill effect upon health when used in bedrooms, &c. It may be, that, in my anxiety to destroy the effluvia from the drain, I used the mixtures too strong: this, however, is a kind of sanitary knowledge which is not generally understood; and I hope that this communication may be the means of, in some degree, giving information which will be useful to the public.

Londoner.

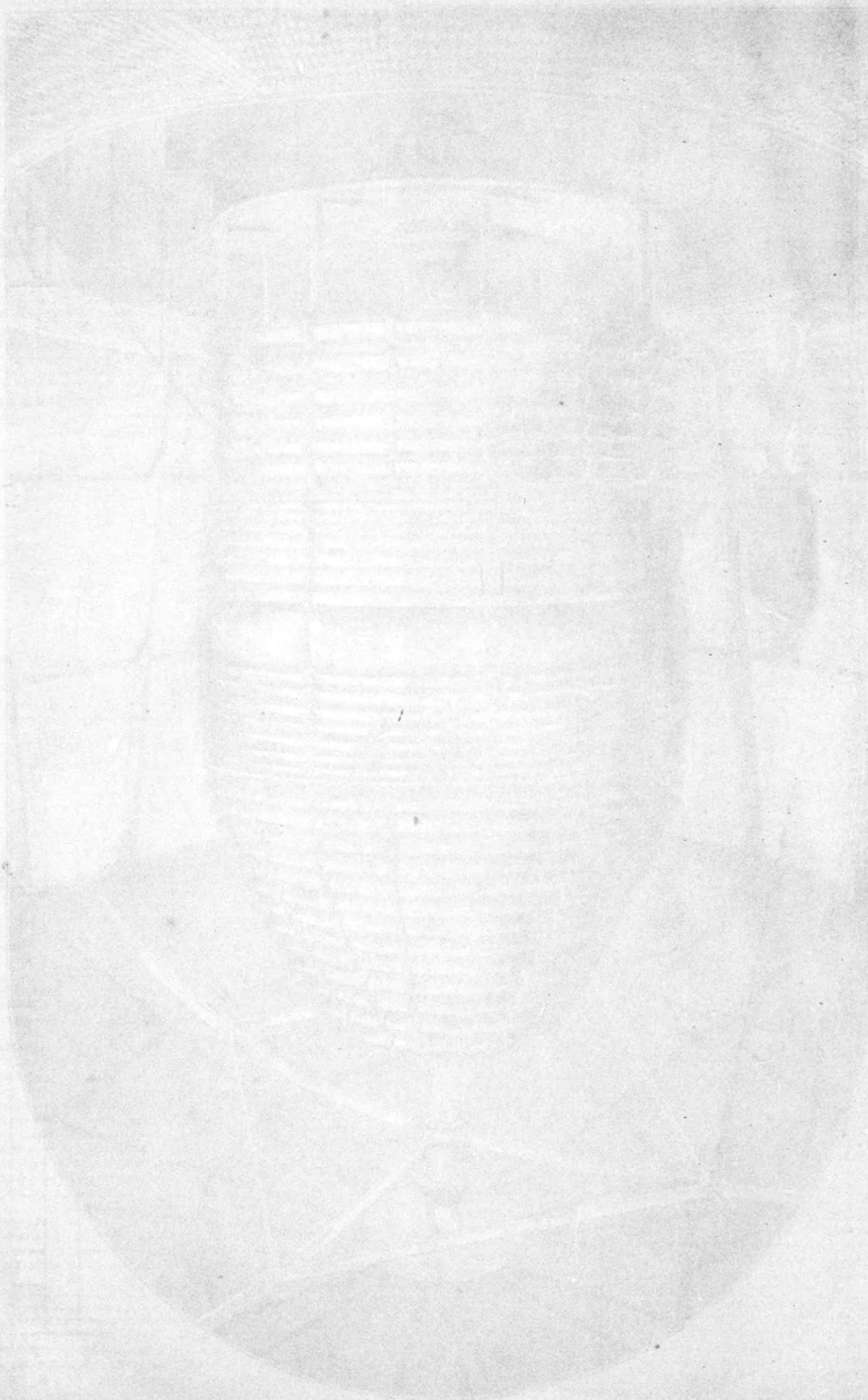




THE NORTH FORELAND LIGHTHOUSE; AND ENLARGED SECTION OF THE CATADIOPTRIC LIGHT.



THE NORTH FORELAND LIGHTHOUSE: INTERIOR OF THE LANTERN.——*Messrs. Wilkins, Lighthouse Engineers.*



THE NORTH FORELAND LIGHTHOUSE.

SEA LIGHTS.

"Let there be Light" was said, "and there was light." Beneficent command! mighty result!

"Before the sun,
Before the heav'ns thou wert, and at the voice
Of God, as with a mantle, didst invest
The rising world of waters dark and deep,
Won from the void and formless Infinite."*

Light and darkness serve to symbolize knowledge and ignorance, wisdom and foolishness, happiness and misery. Correctly has light been called Holy,—

—— "Offspring of Heav'n first born,
Or of the eternal co-eternal beam."

Grand indeed is the theme,—numerous are its ramifications, mind-filling its suggestions; but our purpose at this moment forbids us to do more than express a feeling induced by our subject,—the beacon for the mariner. Statements made at a recent banquet at the Trinity House have drawn attention to the works now in progress for the protection of the navigator, and will serve to show how much is being done in this respect at the present time. According to a writer in the *Penny Cyclopædia* there were then, namely, in 1839, in the hands of the Trinity House, 30 lighthouses; whereas in the recent report alluded to it was stated that the number now under their immediate management is 77, with 32 light-vessels in attendance, on which are employed nearly 700 persons. The principal works on hand, the report went on to say, are the light of the Bishop Rock Lighthouse, the first stone of which was laid in 1852, and of which the light will be exhibited on the 1st of September next. The erection of a light-tower in this position, exposed as it is to the whole weight of the Atlantic ocean, is considered a triumph of engineering skill and perseverance. Smalls lighthouse comes next, at which station for many years the light has been exhibited from an inconvenient structure of wood, erected on piles. The foundation of a substantial granite tower was laid in June, 1857, and the building is now rapidly progressing. Again, the prevalence of sea fogs hanging on the high land of the Needles Point, on which the old lighthouse stands, has rendered it advisable that the light should be exhibited from a less elevated position, and the foundation of a granite tower on the outer Needles rock was laid on the 2nd of July, 1857. The tower is now 68 feet high, and will be completed and the light will be exhibited therefrom on the 1st of January next. At High Whitby the erection of two lighthouses was commenced in April, 1857. These are now nearly completed. Then there is a new lighthouse in course of erection on the Island of Godrevy, in St. Ives Bay, which it is thought will be completed and lighted in the ensuing winter. And, to conclude, a new lantern and light are about to be set up on the North Foreland, situated, as every Cockney sailor knows, between Broadstairs and Kingsgate, in Kent, and of these we are about more particularly to speak.

"Like the great giant Christopher, it stands
Upon the brink of the tempestuous wave,
Wading far out among the rocks and sands,
The night-o'ertaken mariner to save."

We need not say how far back the existence of arrangements for showing a light to ships at night may be traced. We have the remains of perhaps the earliest structure for such a purpose, in this country, in the Pharos of Dover Castle.

Until almost recently nothing was used in lighthouses for illumination but wood or coal in a sort of brazier. Eddystone lighthouse, for years after its erection, had nothing but tallow candles for that purpose. Argand's lamp, in the focus of a parabolic reflector, superseded these, and was the mode of lighting chiefly adopted in this country until quite lately, and after Fresnel had introduced in France, about 1822, the mode of illuminating by refraction, previously described by Condorcet in that country, and by Brewster in this. Mr. Alan Stevenson was sent into France to examine into the system, and, in consequence of his report, Fresnel's principle was gradually introduced into our Lighthouses. In his able "Account of the Skerryvore Lighthouse," Mr. Stevenson describes the characteristics of the two systems of illumination by Reflection and Refraction. In the reflecting apparatus, the lamp is placed in *front* of the mirror, whose surface is so formed that the rays which fall upon it, and are reflected from it, must afterwards move in lines parallel to the axis of the mirror; while, in using refracting instruments, the flame is placed *behind* the lens, whose action is simply to bend the rays, in their passage through it, in such a manner that they come out from its face parallel to a line drawn from the focus to the centre of the lens. In revolving lights, on the reflecting principle, the mirrors containing the lamps are placed on a frame, which revolves on its centre, and carries them round in succession to the different points of the horizon, so that each mirror produces a bright flash when it crosses the line drawn from an observer's eye to the centre of the lighthouse; "but in refracting lights, a simple lamp of great power is fixed in the centre of the light room, while the lenses, placed on a revolving frame, intercept and modify the rays which fall upon them from the lamp, as they pass in front of it, and thus produce successive flashes whenever the centre of the lens crosses the imaginary line already noticed, as joining the observer's eye and the light-room." The two systems, the reflecting and refracting, are known as the *Catoptric* (from the Greek for a "mirror"), and the *Dioptric* (probably from the Greek of "through," and "I see"). A catadioptric light involves both. To form an effective lens of the size required in the dioptric system of one piece of glass, would be scarcely possible, and the necessary thickness of the glass would greatly obstruct the light. The merit of the invention consists then in *building the lens of separate rings*, by which means, when properly done, with the consumption of oil required for seventeen Argand lamps, with reflectors, an effect is produced, it is asserted, equal to that of thirty lamps and reflectors as previously used. The labour of trimming and keeping clean is of course lessened, besides the saving in oil.

Endeavours have been made to apply the Drummond and the Voltaic light, but at present without success. We ought to have mentioned that Mr. Alan Stevenson did much towards perfecting the catadioptric light, and that in his book, to which we have alluded, the theory of it is set forth very elaborately.

Let us now turn to that particular spot on the coast to which our attention is directed, the *Cantium Promontorium* of the Romans, and our North Foreland, where there was probably a beacon of some sort or other in very early times, in consequence of the neighbourhood of the Godwin Sands. The North and South Foreland lights, together, are called by sailors, "The long mark for going clear off the south end of the Godwin."

In 1636 there is distinct notice of a lighthouse here in the shape of letters patent granted by King Charles I. to Sir John Meldrum, giving him right to continue and renew the lighthouses erected by him on the North and South Forelands, and to take toll. It was then merely a lath and plaster building, with a light on the top of it, in a glass lantern. This was burnt down in 1683. A temporary expedient was used for a time; and at the end of that century an octagonal structure of flint was erected, with an iron grate on the top, in which a fire of coals was made at night. In 1723 the fire was enclosed in a lantern; but this lessened the light, and the lantern was removed. Sixty or seventy years afterwards two stories of brick were raised on the original structure, with a decagonal lantern at the top, and the building was brought to nearly its present appearance. The fire was discontinued, and in each of the eight sides of the decagon were placed a lamp and parabolic reflector, with a magnifying lens in front. These lenses, however, which had cost 50*l.* a-piece, being thick and unscientific in form, only did harm, though it took many years to find out this fact; and about 1835, when the Elder Brothers of the Trinity House acquired the management of the lighthouse, the lenses were removed, and ordinary plate glass substituted, with good effect. No one can say our advances have been too rapid in the art of illumination,—at any rate, at the North Foreland. More than twenty years have passed, and another step is about being taken there: a catadioptric light is being constructed for it by Messrs. Wilkins and Co. lighthouse engineers, of Long-acre, by whom several have been set up, and this we have illustrated, giving a view of the lighthouse, and an enlarged view and section of the light.

The new lantern will be 14 feet wide, and 22 feet from the floor to the apex of roof. It will be sixteen-sided, with diagonal astragals. By this direction of the astragals, the interception of light is confined to a small oblique space: were they upright, they would at certain points intercept the light throughout the whole height of the refracting belt. Moreover, the greater stiffness and strength which this arrangement gives to the framework of the lantern make it safe to use more slender bars, and thus, also, absolutely *less* light is intercepted. The panes of glass at the same time become triangular, and are stronger than rectangular panes of equal size. The lantern is formed for the most part of gun-metal and copper, so as to render painting unnecessary. The St. Gobain glass is used, in the belief that it is very much better than English glass. If it be so, our manufacturers should look to it, and learn the reason why. The cost of the lantern will be from 1,300*l.* to 1,400*l.*: the cost of the light apparatus about 1,000*l.*

The new lantern will be completed and fixed in about six weeks from this time, to speak safety to the storm-tossed of all nations. It is only "they that go down to the sea in ships, and occupy their business in great waters," who really know the value of a lamp in a starless night. Long may the North Foreland Lighthouse stand to comfort and advise the passers-by:—

"Sail on," it says, "sail on, ye stately ships!
And with your floating bridge the ocean span:
Be mine to guard this light from all eclipse;
Be yours to bring man nearer unto man!"*

* Milton.

Description of the Diagram to illustrate the principle of the Catadioptric Light.

A. Compound dioptric belt.
B. Catadioptric zones.
C. Lower catadioptric zones.
D. Argand lamp, with three wicks.

THE LIGHTHOUSE.

Proud object of a nation's care,
More than a nation thou dost guard!
Based on the rock, but rear'd in air,
By night and day thou keepest ward.

The sanctuary lamp of old,
Was not so grateful to the sight,
When—from its mask grotesque and bold,—
It stream'd out on the murky night,

As thou, to watching weary eyes
That strain to catch the distant shore,
While stormy floods from angry skies,
With stormier waves commingled roar.

Beam on, thou good and holy light,
Like Heav'n's pure Truth, whose ray divine,
Will guide the soul thro' darker night,
To where th' Eternal Day-beams shine.

* Longfellow.

PROVINCIAL NEWS.

Lincoln.—The building of small and middle-class houses is still proceeding very rapidly in Lincoln, according to the local *Chronicle*, especially in the east and west districts of the city. In Saint Hugh's Croft, in the Monks'-lane, a completely new town has recently sprung up, and so great is the demand for small tenements that no sooner is the erection commenced than the houses are spoken for and let. To the west of the city, adjoining the Carholme-road, a great number of new houses have also been erected, and they likewise find tenants immediately they are completed. Sites for sale in the upper and more commanding portions of the city, where villa residences could be erected, are still untouched, probably through the high price demanded for the land.

Birmingham.—The Netherton tunnel, under the Rowley Hills, executed by the Birmingham Canal Company, for the purpose of affording direct and uninterrupted communication between the South Staffordshire and East Worcestershire mining district, has been formally opened. By the old Dudley tunnel, only one boat at a time could pass along, and that only by being propelled by manual labour. This having been found inadequate, the Birmingham Canal Company projected the work just concluded. The Netherton tunnel, and the works in connection with it, extend from Dudley Port to the Delph, where a junction is formed with the Stourbridge canal. A new canal has been formed from the Birmingham level line, at Dudley Port, through Tividale, and thence under the Rowley Hills to Windmill End. The canal is carried on an embankment as far as Tividale, where the tunnel commences. Between Dudley Port and the commencement of the tunnel there are fourteen bridges and two viaducts, one of which carries the new canal over the turnpike road, and the other the branch of the canal known as the Wolverhampton Level over the new canal. All the masonry is of blue brick with red stone dressings. The tunnel is in length 3,035 yards: it is 27 feet wide, with 17 feet of water, and has a tow-path 5 feet wide on each side, and 16 feet high from the water level. In the construction of the tunnel seventeen shafts have been sunk, varying in depth from 60 feet to 345 feet, and a variety of strata have been passed through,—blue hand, marl, coal,

ironstone, &c. The engineers who prepared the plans were Messrs. Walker, Bingley, and Cross, of London: the contractor was Mr. George Meakin, of Birkenhead. Mr. James R. Walker, resident engineer, has had the superintendence of all the works; and Mr. George Hancox has been the principal agent of the contractor. The tunnel is lighted with gas throughout. At Windmill End, a junction is formed with the old Dudley Canal, the course of which has been improved, and at Brewin's Tunnel a new line, called the Two Lock Line, has been chosen, the tunnel having been converted into an open cutting, and the canal carried along an embankment to Woodside in a direct line. At the Delph a series of eight new locks have been constructed, to improve the communication with the Stourbridge canal. The cost of the works, including the tunnel, the Two Lock line, and the new locks, has exceeded 300,000*l*.

Wolverhampton.—A new music-hall and lecture-room is in course of construction here by private enterprise. Mr. E. Banks is the architect, and Mr. Elliott the contractor. The front elevation will be in Garrick-street, and there will be an approach by a covered entrance from Snow-hill. The room will be above the ground-floor. Its length will be 70 feet; the end next to Snow-hill 40 feet, and the opposite end 58 feet wide, the orchestra and platform being at the narrow end. The ceiling will be 25 feet high, curved at each angle, and the room is to be capable of seating comfortably between seven and eight hundred persons.

Coventry.—The new chimney at the gasworks, which has been some time in course of erection, has been recently completed. The foundations are 16 feet in depth, and the chimney rises to a height of 185 feet from the ground. Mr. Smith, of Birmingham, was the contractor, and Mr. Sinclair the architect. The iron top is in eight parts, and weighs a ton. The chimney is the highest in Coventry.

Farndon.—New school-rooms have been built here, capable of receiving about 100 scholars. The erection is from a design by Mr. Baily, of Newark, architect.

Birkenhead.—At a late meeting of the Mersey Dock Board, it was stated that the engineer would immediately proceed with the completion of the Birkenhead dock works, and that the delays had been owing to legal difficulties respecting the possession of the land required.

Cheadle.—The foundation-stone of a temperance hall, library, and newsroom, has been laid in the village of Kingsley. At the close of an address on the occasion, a collection was made, which amounted to 25*l*. with a donation of 10,000 bricks; and thirty of the members of the local Total Abstinence Society volunteered to execute the excavation required for the building.

Rochdale.—St. Chad's new infant school has been opened: it will accommodate 300 infants. The school is a plain stone building, with open-timbered roof, erected on glebe land, in a field opposite to St. John's Roman Catholic Chapel. A large yard has been walled in for playground.

Preston.—The foundation-stone of St. Paul's Schools, Preston, has been laid. Mr. William Hopwood is the architect. The building will accommodate about 500 children, of both sexes. It will probably cost 2,000*l*. Attached to the school will be a master's house.——A new police-station and magistrates' court has been recently erected at Preston, but, owing to the peculiar construction of the latter, it is said, conversation cannot be heard in it, and a ludicrous scene is described as having occurred in it last week, the bench not being able to hear a word uttered by the counsel, and *vice versâ*, so that the proceedings were dumb show.

Barnsley.—The foundation-stone of two new schools for the Roman Catholic denomination at Barnsley has been laid by Mr. Joseph Locke, M.P. The schools are to be in the Early Decorated style, and consist of three apartments, 60 feet by 20 feet, with open roofs, and two class-rooms, 30 feet by 20 feet. They are to be erected of stone. Accommodation will be afforded for 600 scholars. There will also be a residence for the master, and a play-ground behind the schools, which are situate on the Dodworth-road, and within an easy distance of the centre of the town. The cost of the buildings is provided by subscription, aided by the usual Privy Council grant. The amount required to complete the whole will be about 3,500*l*. towards which the Rev. H. J. Cooke has subscribed 1,000*l*. The architects are Messrs. Weightman, Hadfield, and Goldie, of Sheffield; while the contractors for the masonry work are Messrs. Robinson and Sons; joiners' work, Mr. H. Harrison; plasterers, Messrs. M'Mahon; and painting and staining, Mr. C. Rogers.

Bolton.—At a meeting of the Bolton Board of Guardians on Wednesday in week before last the tenders for the erection of the new workhouse were opened and read. They were then referred to a committee and two architects, Messrs. Hall and Woodhouse, to ascertain the lowest offer, and the meeting adjourned. The guardians again met, when the list was presented, as follows:—

Neill, Manchester	£17,133
Caughey and Langhor, Bolton	17,486
Penk, Manchester	17,654
Pilling, Bolton	17,866
Foggett, Manchester	18,163
Thompson and Co. Manchester	18,251
Farrell and Brownbill, Salford	18,377
Bamber, Preston	19,079
Marsden, Bolton	19,082
Barton, Son, and Moulson, Bradford	19,204
Ward and Ansdell, Nottingham	19,478

In Mr. Neill's contract an offer was made to deduct 650*l*. for the clay upon the ground for making bricks, and in the others an offer of 3*s*. 6*d*. per 1,000; but it was thought advisable to leave these offers out of consideration, as a bargain would have to be made for the clay, whoever might be the contractor. There were also five tenders for portions of the work, but these not embracing all its branches, they could not be entertained. The work was let to Mr. Neill by twenty-seven votes. Mr. Hall, the architect, stated that the contract was twenty-three per cent. lower than the Chorlton Union Workhouse was built for.

North Shields.—The new Mechanics' Institution in Howard-street, North Shields, was publicly opened by Mr. W. Lindsay, M.P. for the Borough of Tynemouth, who on the occasion was accompanied by Mr. Roebuck, M.P. The new building, the foundation stone of which was laid on the 19th July, 1857, is erected at the south-west corner of the intersection of Howard-street and Saville-street. The principal front is in Howard-street, the main entrance leading to the library being in the centre of this front, and a private entrance for the librarian at the south end of it. On the ground floor there are a news-room and a conversation-room, placed one on each side of the principal entrance, and a large room with an entrance from Saville-street. A stone staircase, with iron balustrades, leads to the library-room, which is 50 feet in length by 25 feet in width, and 22 feet high to the springing of the arched glass roof. A gallery is carried round the room. There are also a class-room and a committee-room on this floor. Above these two rooms there are three rooms for the librarian's residence. The contract for the internal fittings of the building was entrusted to Mr. Buckham, of North Shields. The building, which has been designed by Mr. John Johnstone, of Newcastle, is of brick, with dressed stone facings. The elevation is of an Italian character. The contractors are Messrs. Scott and Reed, of Newcastle. The amount of the contract for completing the building was 1,500*l*. The ground cost about 260*l*.

Dundee.—The directors of the Dundee Water Company have accepted the tender of Mr. Moffat, contractor, for the new reservoir at Monikie, the outlay being somewhat under 14,000*l*.; and the contractor bound to have the reservoir completed in October, 1859. It is rumoured that there was an extraordinary difference in the amount of the tenders. On the other hand the Dundee Gas Company have accepted the lowest of eight offers for the large gasometer they propose erecting, there being only a difference of 100*l*. between the offerers on a job of nearly 4,000*l*. The gasometer is to be finished before November next, under a daily penalty, so that there may be no scarcity of gas.

Stromness.—At a meeting of Road Trustees on the 4th instant, offers were received for the bridge of Waith, near Stromness, in Orkney,—from Mr. Wilson, the contractor for the new road, 774*l*.; from Mr. John Halcro, builder, Kirkwall, 680*l*. The latter was accepted. Mr. Mitchell's estimate for this bridge was 615*l*. The works are now being proceeded with. Mr. Wilson has 200 men daily at work, and a considerable number of horses employed. Mr. Doull, of Wick, has also a number of people working at the new bridge at the Ayre of Kirkwall, and at the wall from it to the harbour.

Masons' Strike at Berwick.—The masons in Berwick lately occupied on Dr. Cairns' new church and other buildings have struck work. A refusal to advance wages is the alleged cause of complaint, the malcontents demanding 26*s*. per week instead of the 24*s*. at present allotted them.

STATUES AND MEMORIALS.

The Grantham Monument to Sir Isaac Newton.—The arrangements with regard to the erection of the statue of Sir Isaac Newton, at Grantham, are progressing, and the inauguration, which will be attended by Lord Brougham, will take place on the 21st of September. The statue is reported to have been well cast, and the stone on which it is to be placed has arrived from Wales. The pedestal stands upon a square base of 7 feet 4 in. and 2 feet 3 in. in height. The height of the sub-plinth is 2 feet 8 in.; of the plinth, 1 foot 4 in.; the plinth moulding, 2 inches; the die, 4 feet 9 in.; and the cornice, 1 foot 10 in.—making a total of 14 feet. The torus in the plinth is carved with the *laurus nobilis*, and with the *acanthus* at the corners. The material is a light grey stone generally known as Anglesea marble, and derived from the same quarries as the lions at the ends of the Tubular Bridge over the Menai Straits. The contractor for the work is Mr. W. T. Rogers, of Beaumaris, Anglesea, and the design is from the studio of Mr. W. Theed, the sculptor.

The Liverpool Statue of Archdeacon Brooks.—This statue has arrived at Liverpool from Rome. The likeness is said to be good. The statue is life size, or something more, and is executed on a block of marble of the purest white. Mr. Spence was the sculptor. The site is not yet fixed upon. The statue meantime stands in the large entrance-hall at the north end of St. George's Hall.

Memorial of the late Sir William Peel, of the Naval Brigade.—As might have been expected, the proposal for a memorial of this noble and gallant sailor has met with such sympathy from the public that the committee are enabled to extend their original plan. It is now proposed that the picture of the late Captain Peel shall be painted by Mr. John Lucas, and that it shall be presented to Greenwich Hospital, on condition that a suitable position be assigned to it in the Painted Hall. The Dowager Lady Peel will be requested to accept a cabinet copy, and a print will be presented to every seaman and marine who served in the Naval Brigade under the orders of Sir William.

Memorial to General Barnard.—A monumental tablet is about being erected to the memory of Major General Sir H. W. Barnard, K.C.B., one of the Delhi heroes, in the military chapel, Wellington barracks, Birdcage-walk. The tablet, which is of white Carrara marble, has been executed by Mr. T. Gaffrey, sculptor.

A Statue of Marshal Suchet, Duke d'Albufera, has just been inaugurated at Lyons.

The Mansion and Tomb of Washington.—The "Mount Vernon Ladies' Association of the Union" has been incorporated by the state of Virginia, and powers given to purchase and hold 200 acres of the Mount Vernon estate, including the mansion and tomb of Washington, the garden, grounds, and landing on the Potomac river. The sum to be raised is limited to 500,000 dols. Two hundred acres have been purchased by the association

IRISH NEWS.

The new Catholic church at Tipperary is approaching towards completion, the principals of its high-pitched roof being partially fixed, and the chiselled limestone tower erected to a height of 40 feet. A spire will be added hereafter, when it reaches its full elevation of 85 feet, and the total height will be 160 feet. The east and west gables will have great lancet lights, 34 feet from sill to soffit, and will be filled with stained glass. The interior is still in an unfinished state, and is not expected to be completed before the early part of next year.

We hear that premiums will shortly be offered for the best plans for arranging the council chamber of the Dublin City Hall; and for widening Carlisle-bridge, the extreme narrowness of which impedes the public traffic to the thoroughfares to which it conducts. The roadway of the bridge has been reduced about 1 foot 6 inches, and the rise thereby considerably lessened. The projected new street leading towards the terminus of the Midland Great Western Railway, the lessening of the segmental area in front of the university, and the removal of the unsightly boundary-wall in College-street, are improvements we hope, with others, soon to see realized.

A new line of street, 60 feet in width, is also proposed from Parliament-street to King's-bridge terminus. Mr. Louch, architect, &c. has prepared plans.

A monument of important character has been erected in the new cemetery at Derry, to the memory of the late Patrick Gilmour, Esq. The

pedestal is of Wicklow granite, and the superstructure of Portland stone. The height is 35 feet 6 inches from ground line to top of obelisk, which in itself is 16 feet high. A sarcophagus, tastefully ornamented—with on one side a female figure leaning over an urn, and bearing a wreath in her left hand, while groups of beggars and school children are arranged on either side; on another, the parable of the good Samaritan exemplified, and on a third the armorial bearings of the deceased,—is introduced between the pedestal and obelisk. The figures stand out in bold relief. Appropriate mottoes and inscriptions are cut on the sarcophagus and over the door. Mr. Joseph Kirk, of Dublin, is the sculptor.

The great mass of concrete which formed a ridge across the tideway in Hantoon Channel, Wexford harbour, and presented a great impediment to navigation, has, after much labour, been removed, under the direction of the county surveyor. Beneath this lies a stratum of gravel, which can be removed at the rate of thousands of tons per diem.

A new lighthouse, of a more ornamental character and different design from those on the coast and headlands of Ireland, is to be erected at Blackpoint, on the Smith Barry property, and from the designs of Sir John Benson, C.E. It will be 80 feet high, 12 feet square at the base, octagonal at high-water mark, and circular at the lantern. Two iron balconies will project from it, and the approach will be on two handsome arches. Materials, brick and limestone. Cost, about 800*l*.

A new harbour of refuge at Skerries is strongly urged on the consideration of the Government by the Drogheda Improvement Commissioners.

The new lighthouse at Rockabill is advancing towards completion.

A great fire has taken place at Chapelizod Mills, near Dublin (the property of Mr. Dargan), and property to the amount of 8,000*l*. destroyed. The building consumed was 160 feet in length, 40 feet in breadth, and 60 feet high, containing five lofts. A portion was fire-proof and escaped.

In Belfast, the building trade is particularly brisk. The structures in progress of completion comprise the new custom-house and post-office; the Sailors' Home (already noticed in the *Builder*); the mercantile establishments of Messrs. Campbell, at the corner of Nelson-street; Messrs. Woodman, in Bedford-street; Messrs. Lindsay, in Donegal-place; and of Messrs. Arnott. The old Independent church, in Donegal-street, is being pulled down, and a new building erected on the site; and many other works of a less extensive character are in progress. There is a good demand for tradesmen.

Tenders are being received for the erection of the long competed for De Vesci testimonial, at Abbeyleix, according to the approved designs of Mr. J. S. Butler, of Dublin, architect.

At Rathmines and Rathgar, near Dublin, buildings of a mercantile and domestic class are speedily springing up, and the locality is rapidly rising.

The Governors of the Bank of Ireland are about to erect a new bank-house and agent's residence in Donegal-place, Belfast, according to designs by Mr. S. Symes, architect. The front will be of chiselled granite, with cornices and dressings of Portland stone; the lower story being rusticated, with Doric cornice, and porch, and the remainder of the façade of Grecian character, surmounted by an enriched cornice. Interiorly, the arrangements are of the usual character for such purposes: the offices, safes, and lavatories are in the rear, and occupy one story. The second story comprises the agent's apartments, and is chiefly lighted from the front towards the street. The building will be expensive, owing to the quantity of piling required. Tenders are being received.

It is in contemplation to build a new lighthouse on the Carrig Phadrig rocks, in the Bay of Killala.

The proposed improvements to the harbours of Westport, Newport, Ballina, and Killala, are likely to be carried out immediately; surveys, plans, and estimates having been already submitted to Mr. Barry D. Gibbons, harbour engineer to the Board of Works. At Newport and Killala extensions to the present quays are contemplated; and at Ballina docks and wharfs are said to be required, and will be constructed when the necessary funds are obtained.

Lord Palmerston, during his recent visit to Ireland, granted a free site for a new Roman Catholic chapel on his estate at Cliffony, as also 40*l*. towards its erection.

A new church has been built near the town of Carlow, on the Athy road, from the designs of Mr. Derrick, architect. The plan is cruciform, with square tower and broach spire rising to a height of 217 feet, at the intersection of the cross, and consists of nave, transept, choir, vestry, porch, &c. and the dimensions internally are 113 feet by 25 feet. Attached to the tower is a smaller one of octagon shape, terminated with pyramidal roof and crocketed pinnacle, and containing a winding staircase leading to belfry and to the pulpit, through a doorway formed with solid granite in the massive but deeply splayed and moulded pier of the tower. The roof is of open timber work, stained, varnished, chamfered, and diagonally-sheeted; and between each window springs a great trefoil arch of granite, as also at the transept. The communion-table, choir seats, and other fittings correspond with the character of the roof, and the flooring is of Minton's encaustic tiles, the chancel having black marble steps. An appropriately-designed baptismal font occupies a position in the longest arm of the cross. Externally, the effect of the building is peculiar, owing to the application of materials of different colours, three kinds of granite (all local), namely, white, bluish, and grey, being distributed throughout, either as walling, plinth courses, or kneelers or hoods to buttresses, &c. and Yorkshire stone being used for the window tracery, gurgoyles, &c. The chancel has a five-light window, and each other gable a four-light window, filled in with elaborate tracery, and having hood-mouldings springing from richly-carved corbels. Grotesque figures are introduced at the commencement of the broach spire and the eaves throughout. The angles and flanks are ornamented with hooded buttresses, and the gables are terminated by finials. The tower is divided into two stages, the upper receding from the lower, connected therewith by a deeply-splayed weathering, and having two double-light traceried belfry windows on each face. The spire is ornamented by traceried and hooded lights, as also clustered pinnacles rising out of the broach, and is terminated by a gilt cross. We must observe that the entrance-gates and boundary-wall are characteristically designed, though the workmanship is somewhat objectionable. The expense of building this church was about 12,000*l*. and defrayed by Colonel Bruen, who handed over for this purpose the funds collected for his defence of an election petition.

We regret to see so little improvement in Carlow. The railway station is a neat Elizabethan structure, of grey brick and granite dressings; and the Roman Catholic Cathedral, in which is Hogan's *chef-d'œuvre*, Dr. Doyle's statue, is a work of considerable architectural pretensions; but the commercial establishments are of a very inferior class, and exhibit little signs of improvement since our correspondent visited the town twelve years ago. Some alterations have been made at the college, and a new national school of unpretending character built.

PRESERVATION OF STONE IN MELROSE ABBEY.

In a visit, the other day, to this beautiful ruin, I was much struck with the extraordinary degree of preservation in which some of its most delicate details still exist, and, although probably this is familiar to the *Builder*, I am tempted to advert to it. The abbey was founded by King David in 1136, and, after suffering severely, seems to have been greatly rebuilt by Robert Bruce, in 1324, he having given 2,000*l*. towards its restoration, which was a great sum in that time and country.

Taking the latter of these two dates as the period of the execution of a principal portion of the architecture, it yet affords a duration of more than 500 years up to the present time. Various of the traceries of the windows, as also the groinings of the arches of the roof, remain almost intact, as well as the varied and beautiful foliages that enrich the work throughout: but what most attracted my attention and admiration on the score of preservation were various of the little highly wrought and elaborately pierced canopies to niches, that seem nearly as perfect as when left by the workman's chisel. These exist in all directions on the outside as well as the inside of the building, so situated as that at any rate the major portion of them could be in no way protected. They would have been, one would think, the first parts to perish, and yet they now exist apparently in very nearly their primitive crispness; and this after the wind, rain, and frost of 500 years in a climate not thought very mild. The stone came from the neighbouring village of Dryburgh, also close to the Tweed, at least so they say here, and the character of the material appears similar, although what is wrought now does not seem to stand so well. In conversation with an intelligent builder here, he gave it as his opinion, that as regards the surface of the work, "they must hae putten something over it," in the first instance; a preparation which has had the effect of preserving it to a degree which I fancy is almost unparalleled in this island. Is there any record of such a kind of preparation having been applied to old buildings in our islands? If so—

> "The monks of Melrose," who "made fat kail
> On Fridays when they fasted,
> Nor wanted ever good beef and ale,
> As lang's their neighbour's lasted,"

made better preparation for the welfare of their abbey than even of themselves or their order; and, if so, in case the preparation of late tried over portions of the New Houses of Parliament is half as efficient as that which may have been thus used at Melrose, it will be all that can be desired.

EPSILON.

LAW NOTES.

Improvements in Land.—Metropolitan Building Act.—A person left two estates to his widow for life, and after her death to his children. The Crystal Palace and West End Railway Company, under their compulsory powers, purchased one of these estates, and paid the purchase money into court. The Commissioners under the Metropolitan Building Act soon afterwards gave notice to the tenant for life, requiring that the houses on the other estate should be rebuilt, and with this notice she complied at her own expense. The outlay exceeded the amount paid into court for the other estate, and the tenant petitioned that that sum should be paid out to her in part payment of the expense which she had incurred. The Master of the Rolls declined to interfere, but on appeal the Lords Justices granted the application.—*Re Davies' Estate.*

Copies of Deeds.—Conditions of Sale.—In the absence of special conditions to the contrary, the purchaser of the larger of two lots of land is entitled without payment to the deeds, and the purchaser of the smaller is entitled, also without payment, to attested copies of all deeds which are delivered to the purchaser of the larger lot.—*Peterson* v. *Elwes.*

Splitting Demands.—Plaintiff brought two actions in a County Court,—one for rent in arrear, and another for double value for holding over after notice to quit. It was held that they were distinct causes of action, and might legally be made the subject of several plaints.—*Wickham v. Lee.*

ENGLISH AND FOREIGN WINDOW TRACERY.

In your last number we are favoured with an interesting description of the village church of Chaddesley Corbett, but, as the *Builder* is a main channel for disseminating architectural opinions, an erroneous opinion which the writer of that article has expressed, should not be allowed to pass without correction. I allude to his assertion of a superiority in the examples of window-tracery on the Continent. He lays especial stress upon St. Ouen, at Rouen, terming it "an inexhaustible storehouse of geometrical composition." Now St. Ouen was not only erected after the Geometrical period, but its windows are for the most part without variety, far removed from Geometrical, and verging on Flamboyant. Even the much-admired circular west window has a stringy closeness which would shrink from comparison with its betters in this country. I need not follow your correspondent to Bayeux, Amiens, &c., but will confront his opinion with the fact, that our highly-gifted and intelligent architects find great difficulty in the tracery of new windows, and can obtain but little help in importing from abroad. Those, in this country, who feel interested in securing for Gothic architecture a true cultivation, should, I submit, in their estimates of the comparative merits of English and foreign, be on their guard at the present time not to underrate the work of our ancestors. The Chapter House at York, the Retrochoir of Lincoln, and the glorious Pentalpha window in the western front of Exeter, are without their equals in the foreign Geometrical tracery; and I shall esteem it a favour to be directed to any foreign windows of flowing Decorated character that equal the west window of York, the north window of Sleaford, or the modest chancel window of Castle Ashby. In France and some adjacent districts we find the Gothic remains exhibiting a higher aim, a more

elegant finish, and a wonderful profusion of sculpture; but, much as the Continental builders have excelled in many things, in the fundamentals and in the spirit of Gothic art, it must be admitted that the English have shown themselves the first masters. V.

THE TREES IN CHELSEA COLLEGE GARDENS.

Knowing how strenuously you advocate the preservation of whatever is beautiful, in combination with public improvements, I am led to call your attention to the fact, that the score of choice old plane-trees now standing on the verge of the Chelsea-college garden, and abutting on the new quay recently built opposite Battersea-park, are said to be doomed to destruction. Having been sold at a high price, it is purposed to fell them in the ensuing autumn. Now, if the roadway on which they partly stand were likely to be much frequented, a plea might be advanced for their "partial" demolition; but as there is at present no likelihood of the quay being carried beyond the immediate locality in question, surely they might be allowed to remain, if only for shade. A few benches placed beneath them would make one of the most agreeable lounging-places imaginable. The trees are in themselves magnificent, being the growth of, perhaps, a century or more; and surely the authorities are not so devoid of all sense of the beautiful, as for the consideration of a few hundred pounds to destroy what millions could not purchase.

Pray, Mr. Editor, raise your potent voice against the perpetration of so gross a vandalism, and add one more proof to the many you have already manifested on behalf of the public good.

I would also point out how desirable (as well as facile) it would be to plant trees of the same kind at intervals along the whole line of quay, in the same manner as obtains at Paris by the Seine. London is the largest, and there is no reason why it should be also the ugliest capital in the world.

Sylva.

BOURN WATERWORKS, LINCOLNSHIRE.

ARTESIAN WELLS.

Observing your notice in last week's number of the above works and company, I would add the following information, as likely to be of great interest to many of your readers; for, probably, there is not another artesian well in this country, if in Europe, which yields so large a supply of water for the size of the bore. I accurately gauged it in 1856, as well as checked its yield, by careful admeasurement, and it was 567,000 gallons per diem (of twenty-four hours)—an enormous flow up a 4-inch pipe.

And it is almost as unusual to supply a town, with water constantly on, under "high pressure," from a well in the town, *without the aid of engines or pumps*.

Fire-cocks or hydrants are placed on the mains throughout the town, by which a jet of water may be thrown upon any house direct from the main, by the natural force, without the intervention of a fire-engine. Bourn water-supply may be considered, I think, unique.

James Pilbrow, Engineer to the Company.

ST. MARY'S TOWER, TAUNTON.

Sir,—Mr. Denison only said what many others have been saying for months past, when he deplored the course which it is proposed to adopt in rebuilding the steeple at Taunton.

Had it been possible, I am sure the right course would have been to prop up the old tower, and to erect another, as a campanile, in some part of the churchyard. As Mr. Scott and Mr. Ferrey took the responsibility of saying that this was absolutely impossible, we cannot doubt that they were justified in taking the old steeple down.

But I believe that most men who care much for art will disagree entirely with your correspondent "M. I. B. A." who objects to repetitions "*usque ad nauseam* of existing works of the thirteenth century," and yet gravely advocates what would most undoubtedly be a repetition "*usque ad nauseam*" of a work of much later date!

It is unfortunate that "M. I. B. A." cannot see that Mr. Denison asked for *no repetition*: his whole object was to *prevent the folly of a repetition*; and, until I am corrected, I refuse entirely to believe that two architects of such eminence would willingly repeat, as they have to do in this case, rather than invent and design, as Mr. Denison desires they may.

I do not think "M. I. B. A." can really see much "independence" in the course the architects are made to pursue: to me they seem to act "as bondmen to their masters."

Perhaps before "M. I. B. A." discusses Somersetshire art again he will consider whether Wells and Glastonbury sin against the "old associations of the whole county," in that they are not examples of his favourite Perpendicular style. To ordinary minds they are the real glories of Somersetshire; and, if architects are to inquire, before they design a steeple, in what style the majority of old buildings in the county are; I think it would be reasonable that they should also ask in what style is the best building in the county? Then, most unquestionably, at Taunton, Mr. Scott and Mr. Ferrey would have the pleasure of emulating the glories of Wells, instead of erecting a mere copy of an old steeple, which any good mason could do nearly as well as any two architects.

The copy will be of no more value to us than careful drawings would have been: and if Mr. Denison's wise council does not prevail, we shall have an opportunity of seeing how poor even such an example of Perpendicular work is, when bereft (as it will be entirely) of all the pleasures of old associations, and all the beauties of the weather stains of 400 years. G. E. S.

BILLS OF QUANTITIES.

Sir,—Much has been said in your journal, from time to time, about the "bills of quantities" system, and as some of your correspondents appear to decry the practice altogether, allow me to submit that it is in many instances indispensable with architects of large business, and more especially where public competition is invited, and the time for from fifteen to twenty persons to tender is limited to a few days.

It would be impossible to despatch the business of some offices, if time had to be allowed for every contractor to take out his own quantities. If a surveyor requires two days to take them off correctly, and the time for inspection of the plans &c. is limited to six days, as is often the case, it must be a great convenience to a contractor to be furnished with a copy of the same quantities as his competitors, as the time he then has to spend in examining the plans, specifications, and conditions, previously to affixing his prices, is comparatively short.

I agree with the practice of allowing one day, after the tenders have been settled, for examining and correcting quantities, before the party is called upon to sign an agreement to fulfil his contract.

The following is an abridgment from the conditions I generally adopt, viz.:—

"Each contractor will be supplied with a copy of the quantities for his convenience, for which he will be charged the sum of , and a further sum of per cent. on the amount of the contract, should he be the successful competitor. One day will be allowed for corrections of the said quantities, after the tenders have been settled, prior to the successful competitor being called upon to sign the contract, after which he, the said contractor, shall be alone responsible."

This clause is not to preclude any contractor from taking his own quantities if there is time and convenience. W. B.

A DEFECT IN BENEFIT SOCIETIES.

Sir,—Benefit societies may now be numbered almost by hundreds: many of these possess stability: others—perhaps the greater portion—offer very doubtful security for the investment of the hard earnings of those classes from whom they derive their support. Many advantages are held out to investors, in some instances more than in others. One great want or omission prevails almost universally amongst the provisions for their members. No allowance is made for the unemployment of members, and yet this is the most important point perhaps of all. Many may pass through life without being seriously attacked by illness, yet but few who do not suffer at times from a want of employment, which, if unaided, frequently leads to sickness. The provision for unemploy should be about two-thirds of that allowed for illness. A few, but very few, might be found, perhaps, who would come upon the funds in preference to working for their living, but there would be little or no difficulty in detecting idlers who would not work, for it is soon known whether work is abundant or scarce amongst the majority of the working classes. No doubt there are many instances constantly occurring where individuals who cannot find employ feign illness, and successfully, too, and thus obtain the relief that otherwise would be denied them, however necessitous their state. It may be said that the workhouse offers relief to the destitute and unemployed, but the difficulty of obtaining out-door assistance from thence is great, and of an insufficient character; and there is a stigma attached thereto that is repulsive to the industrious, while to seek a shelter within those hateful walls necessitates the breaking-up of homes, and ruin to their future prospects. Were provision made for the unemployed, many would join benefit societies who now will not do so, and they might assume an importance and position of affluence very few of them have as yet attained. For, although they are many in number, the greater portion are possessed with *comparatively* scanty funds, while some one or other of them is continually becoming insolvent, to the serious loss of those who have contributed their hard-earned savings. W. D. M. M.

THE RAPID DECAY OF STRUCTURES IN ENGLAND.

When looking at vast and venerable ruins, like those of Kenilworth, rich with coatings of different coloured lichen, the interiors of the once stately halls overgrown with ivy and other vegetation, massive walls, as well as delicate tracery, crumbling into shapeless masses, the observer is surprised at the comparatively short time which it takes in this country to transfer a magnificent and seemingly substantial building into a picturesque ruin.

It was only in A.D. 1575 (283 years ago) that the Earl of Leicester entertained Queen Elizabeth with so much pomp and ceremony: then those now deserted halls were lively with the sounds of minstrelsy and rejoicing; the inner walls were gay with tapestry, gilding, and decorated furniture; coloured light came through the stained glass windows; and, instead of the owls and other wild birds which now haunt the place, were fair ladies and courtly knights, and numerous bands of revelling attendants. At this time a considerable portion of the building was barely completed; and fifty years after the above date, revels were held at Kenilworth, in rare Ben Jonson's time. This gives a date of only 233 years since the whole place was in proper repair,—a time which the fourth man who has lived only to the age of sixty years, was in existence.

It is extraordinary how soon dilapidation takes place in even the most substantial building, when the roof fails, and the elements are allowed to play in at the broken windows.

The spacious mansion of the Delawar family, in Northumberland, where, within the last century, gay parties gathered together, has since then been partly destroyed by fire. No pains were taken to remedy this disaster, and now the whole edifice has assumed the livery of time, and fallen into a hopeless state of decay.

In Scotland, many of the old castles, built in the most substantial manner, with massive materials, are, in many instances, of not much older date than the reign of our own Queen Elizabeth, and yet are now in ruins. Some of these bear the marks of Oliver Cromwell's cannons; but, in other cases, the change has been wrought by the desertion of the owners and the natural progress of decay; for some of these are so removed from the busy haunts of man, that he cannot be blamed for the demolition. We have seen churches which, at about the time of the Reformation, were in good order, have now scarcely one stone left upon another, and other now ruinous religious edifices, which at that date were in as fair order as Westminster Abbey is now.

Even with care, and under the best circumstances, it is necessary, in this changeable climate, where the usual quality of stone is used, to reface buildings every three or four centuries. The tower of St. Nicholas's Church has been almost entirely reset with new masonry. Many of the turrets, &c. are of new work, executed as closely as possible in the old style. The Norman Castle, at the same place, has undergone similar treatment within the last few years. The great towers and other parts of Durham Cathedral have been refaced. Henry VII.'s Chapel, at Westminster, although only built about 400 years ago, has needed to be completely refaced with new stone. Taking a number of examples, it appears that stone buildings in England, in the most instances, require thorough external repair every three centuries.

In the interior of Westminster Abbey, for instance, the decay of the Gothic tracery on the royal tombs, &c. is remarkable. In some instances the niches are so much mouldered away that it is difficult even with fancy's eye to

trace the original form, and it is both curious and instructive to compare the firm and unaltered condition of the bronze effigy of the Queen Eleanor with the indistinct traces of the architectural decorations of the tomb. Even the wood and iron-work are in a better condition than that upon the stone which has been used. The gilding of this bronze figure, although now nearly removed, has, no doubt, been an important means of keeping it in its present fine state of preservation. Stone effigies in this famous abbey, although of not nearly such old date as that of Queen Eleanor, have become shapeless masses, in spite of attempts at preservation by painting, &c. This circumstance should cause us to consider the materials most proper for the memorials of those whom it is intended to honour, if we wish to preserve the memory of our worthies beyond a very limited period. No doubt the most permanent monuments would be those of bronze, thickly electro-gilt, and decorated, when necessary, with enamelling. In some cases, thin gilt copper has been covered over wooden and stone figures, and the effect of time resisted in a remarkable manner. At the East-India House, and also in the British Museum, are some rare specimens of thin gold plate, which has at one time covered the features of some of the ancient Babylonian kings. On the plates, which are probably 3,000 or 4,000 years old, there is no mark of rust or decay. Would it not be possible to preserve the fine sculptures of Flaxman and others by a thin covering of similar metal, in a manner which would not interfere with the delicacy of the design, and which would be the means of preserving the original work in perfection for a thousand years and more?

Some of the brick buildings of Henry VIII.'s reign have been less acted upon, so far as the wide surface is concerned, than stone structures of the same date. It is true that in the brickwork there are not fine details exposed to the weather; but the fine old purple brickwork of that date is doubtless a serviceable shielding material, as is shown by a contrast of the decay of the stone facings with the brickwork.

It is a solemn matter to see,—notwithstanding that it is an important struggle of humanity to defy the ravages of time,—rare men, rare buildings, and other efforts of genius, and examples of ingenious handiwork, surely progressing towards that dusky oblivion which now shadows what were once the glories of the earth.

RECENT PATENTS CONNECTED WITH BUILDING.*

Improvements in the Construction of Beams, Girders, and Bridges.—Dated September 19, 1857. *W. H. Peake.*—A series of bars and plates of iron are built one on the other, and bound together by bolts.

Improvement in Doors. (A communication.) Dated September 7, 1857. *P. A. de Fontainemoreau.*—This consists in a certain appendage applied to doors for preventing draughts. It is composed of two narrow strips of wood connected edge to edge together by hinges. One of the strips, termed the "connecting piece," is secured to the lower part of the door. The other, termed the "flap," hangs in such a position that, when the door is closed, it may cover any opening which may exist between the floor and the door.

Improvements in Stoves and Fire-places.—Dated September 7, 1857. *T. Goodchild.*—Below the bottom grating of a stove or fire-place a drawer is applied, preventing air passing up and for receiving ashes, &c. A false bottom is put into the grate. The front fire-bars, the sides, and the back of the fire-place are fixed that no air may pass through them. In front of the fire-bars is a sliding screen, which, by preference, has openings in it glazed with talc. The stove is filled with coal, and the upper surface thereof lighted, the upper edge of the screen being brought below the top fire-bar, and lowered from time to time as the fuel consumes away.

Improvements in the Manufacture of Articles used for forming Flues and Air and Water Passages in Buildings. Dated October 1, 1857. *J. C. Jennings.*—Here cast-iron trimmers, with flanches and recesses to receive the joists, are made with air-passages through them, so that any air admitted between the floors by air bricks, &c. may pass freely through such trimmers. Hollow blocks of earthenware are used below the hearths, so that the passages through them correspond with the air-passages in the trimmers. From the ends of such blocks proceed like blocks, which rise up the sides or the backs of the flues or chimneys corresponding with hollow passages for connecting the horizontal and upright blocks. Part of the invention is applicable when making flues and air-passages conjointly. For conveying away rain-water from roofs, and for ventilating drains, hollow blocks are formed suitable for bonding in with the brickwork of a building, such blocks being of clay expressed through dies or moulding orifices.

Improvements in Chimney-cans or Apparatus for Promoting Draught in Chimneys. Dated Sept. 30, 1857. *W. Sandilands.*—The main shell of the improved can consists of a cylindrical metal tube, the upper end of which is encircled by a short length of wider tube, which stands up above the central tube, and is bell-mouthed at its open top. This shorter piece of tube is attached to the main tube by open stay pieces, leaving a passage for air between the two. The end of the main tube is sheltered by a conical cap, with its small end upwards. This conical cap is placed at some little distance above the main tube. Down draughts are thus, it is said, prevented.

Pot for Chimneys and Ventilation. Dated January 28, 1858.—*William Spence*, Chancery-lane.—This invention consists in manufacturing pots of clay or similar materials suitable for chimney-pots, in such manner as that the mouth for the exit of the smoke or air may be protected, and the smoke or air within the pot receive an upward instead of a downward tendency from the action of the wind or current of the external atmosphere. This is effected by providing the pot with an upper or outer lip or cap projecting above, and at a small distance from, the inner or ordinary shaft, and placing around or externally to such inner shaft a space, or a series of spaces, so situate in reference to an inclined surface below that the wind or external current of the atmosphere will be deflected upwards, and make an upward current through their spaces, and counteract the tendency to a downward current which such wind would otherwise produce at the mouth of the inner shaft if not protected, and thus aid the up current of the inner or ordinary shaft. Such pots may be made of a square, circular, hexagonal, or other shape, and present an ornamental appearance externally, and be adapted to the style of architecture of the building upon which they are placed.

Improvements in Protecting the Walls, Ceilings, Wainscots, and other Parts of Buildings from Humidity. Dated Oct. 19, 1857.—*V. Pears.*—This consists in protecting the walls, ceilings, wainscots, and other parts of buildings from humidity, by coating the same with glass made adherent to sheets of wood by means of a composition which is described.

Certain Improvements in Purifying and Filtering Water. Dated Sept. 5, 1857.—*R. Johnson.*—This consists in removing mineral substances from water by the influence and chemical action of the air, and in separating vegetable substance or other impurities by filtering. The water is caused to pass through the air in jets, and fall upon broken slate, &c.

Improvements in and connected with Cocks and Valves, especially adapted to preventing the Bursting of Water-pipes from Frost. Dated Sept. 30, 1857.—*J. Harris.*—One of the main features here consists in providing a valve or passage for the admission of air into pipes in which water has been led—say, for instance, from a main into a house cistern—in order to drive out the water therefrom as soon as the supply is cut off, to prevent the bursting of the pipes by the freezing of the water therein; and this the patentee effects by certain arrangements of cocks and valves, or by fitting at the upper part of the pipe, or behind a ball or other cock, a valve opening inwards to allow of the entrance through it of air. The arrangements of cocks and valves consist mainly in so fitting them that, supposing water to be turned on from a main by means of any of the cocks or valves, one movement of a lever to a given distance will shut off from the main, and by moving the same lever a little further in the same direction, the services will be emptied or allowed to flow out. The improvements are also applicable to bib cocks, and to cocks and valves suitable for boilers, for water-gauges, and for supplying baths.

Improvements in Forming the Joints of Pipes for conveying Water, Gas, and other Fluids. (A communication.) Dated Oct. 17, 1857.—*R. A. Brooman.*—According to one of the inventor's arrangements, one of the pipes to be connected is formed with an enlarged end, terminated by a recessed flange, into the recess of which a ring of vulcanised india-rubber is placed, and against this ring a circular plate is tightly screwed to the flange. The second of the two pipes to be connected is then forced through the ring, which is of such an internal diameter as to admit it and grasp it tightly, forming a fluid-tight joint. If the two pipes thus connected are to be subjected to transverse strains, the plate may be formed with a funnel-shaped flange, spreading outward from the packing-ring. According to another arrangement, the enlargement of the end of one of the pipes may be dispensed with, and a boxed flange formed on the pipe, into the recess of which flange a ring of vulcanised india-rubber is forced, and is there held by the boxed sides of the recess.

Improvements in the Manufacture of a Composition to be employed in the Preparation of Pigments. (A communication.) Dated Sept. 5, 1857.—*W. E. Newton.*—This relates to producing mixtures or compounds of alumina with other earths or alkaline earths as bases for pigments, and for the preparation of the "satin white" used by paper-stainers. Also to the substitution of sulphate of alumina instead of alum in the preparation of pigments, especially Prussian blue and the lakes.

Improvements in the Construction or Manufacture of Earthenware Pipes. Dated Sept. 30, 1857.—*C. C. Creeke.*—Instead of making the pipes of equal thickness throughout, the patentee proposes to flute them, or to give their outer surface corrugations or flanges to add to their strength without adding to their weight. The junction of the pipes is made by forming an annular groove at each end of the tube for receiving one-half of a projecting flange or metal ring, which must be perfectly imbedded with red lead.

Kilns or Ovens for Burning or Firing Bricks, &c. Dated Jan. 22, 1858.—*William Basford*, Longport, Staffordshire.—This invention of improvements in kilns or ovens for burning or firing bricks, tiles, pipes, and pottery or earthenware, and in the mode of charging the ovens, or placing or setting the articles that are to be fired therein, relates in the first place to various improvements in the construction of kilns or ovens, or of arranging the internal parts; the objects of most of the improvements being economy in the construction or in the consumption of fuel, or the more equable and uniform distribution of the heat given off from the fires, so that neither the oven nor any of the articles to be fired therein may be damaged by any excess of heat or particular parts of the oven, as is now frequently the case. The inventor has found that by making the mouths and fire draughts of smaller dimensions than usual, and increasing their number so as to reduce the space between them, he can obtain a much more uniform and regular heat throughout the oven than heretofore.

Improvements in Machinery or Apparatus for the Manufacture of Bricks, Tiles, Pipes, and other Articles of a similar Nature. Dated Oct. 19, 1857.—*H. Wimball.*—This relates to a peculiar construction of pug-mills, suitable either for pugging or working clay, or for making bricks, tiles, and drain-pipes, and other similar articles, and mainly consists in the employment of pug-mills with two or more shafts and sets of knives, in place of using only one shaft and set of knives, as is at present the case.

Improvements in purifying and cleansing Clay, and in the Manufacture of Bricks, Tiles, and similar Articles therefrom. Dated Oct. 9, 1857.—*J. Harland.*—The clay is here contained in a travelling-box running on anti-friction rollers, and impelled by a rack and pinion, for the purpose of forcing the body of clay against the dies or bars employed for shaping or purifying it. The lid of this box is fitted in grooves, and as the box moves forward the lid is held stationary by bearing against the bars or dies, whilst the box with the clay continues to travel onwards, and forces the clay through the moulding dies or bars. The purifying of the clay is accomplished by forcing it through a grating of any desired degree of fineness, placed either in the lid of the box or at the ends thereof.

Improvements in Machinery for the Manufacture of Bricks. Dated Oct. 10, 1857.—*R. and J. Porter.*—The moulds are arranged horizontally around a spindle, and caused to revolve by a star-wheel or tooth-gear. They are fitted with loose bottoms, for delivering the brick. These bottoms are actuated by a lever, to which are fitted a sponge, sand, and oiling apparatus, for lubricating the brick-mould and facilitating the easy delivery of the brick.

Certain Improvements in Machinery or

* Selected from the condensed lists published in the *Mechanics' Magazine* and *Engineer*.

Apparatus for Making Bricks, Tiles, and other similar Articles, and also in the Machinery for preparing Clay for the same Manufacture. Dated September 26, 1857. *J. Lewis.*—This relates to improvements upon an invention for which letters patent were granted to W. Grimshaw and E. Rowland, September 7, 1853, the principal object being to make bricks of dry clay by compression in a mould by the direct action of steam power.

Improvements in Rock-drilling Machinery. (A communication). Dated September 25, 1857.—*A. V. Newton.*—This consists in improved means for operating the drill, giving it its reciprocating motion, and rotating the same intermittently. Also in an arrangement of the frame which contains the working parts, and by which the said parts are adjusted to work at different angles. These improvements cannot be described without engravings.

Improvements in Machinery for Cutting off and Heading Lengths of Metal, applicable to the Manufacture of Rivets and other Articles. Dated September 15, 1857.—*T. Archer, jun.*—This consists in a combination of mechanical parts in which a moveable cutter and die are carried by a sliding plate.

Books Received.

Architectural Sketches from the Continent. By Richard Norman Shaw, Architect. Day and Son, London.

Mr. R. Norman Shaw's "Architectural Sketches from the Continent," just now published by Messrs. Day and Son, of Gate-street, Lincoln's-inn-fields, make a very charming volume, as fit for the drawing-room table as for the architect's library. The sketches include views and details from France, Italy, and Germany; and although, as the artist feels is the case, of a somewhat disconnected nature, are for the most part fresh and suggestive. In the preface he says,—"We have recently commenced to engraft on our national style many beauties and peculiarities hitherto confined to the Continent. A work illustrative of these peculiarities may, it is hoped, find favour in the eyes of those who are anxious to see our art progressing and gaining increased vigour by an infusion of new elements."

In France, Amiens Cathedral (especially the north side of nave), Angers, Auxerre Cathedral (sculptured groups), Beaune (an effective bit of the Hôtel Dieu), Beauvais Cathedral, Bourges (especially Jacques Cœur's House), Le Mans Cathedral (two interiors and two exteriors, of portions), Paris Cathedral (details), the Hôtel de Cluny, Sens Cathedral, Strasbourg Cathedral, and Toul Cathedral afford subjects. From Italy we have details and views of buildings in Assisi, Florence (a view of the hospital of the Bigallo, and interior of San Miniato) Lucca Cathedral, Milan, Naples, Padua (St. Antonio), and Pisa.

Amongst the German buildings, the cathedral at Erfurt (the view of the porch very good), Freiburg Cathedral, St. Lawrence, and St. Sebaldo at Nuremberg the gateway at Prague, an oriel from Inspruck, and Ratisbon Cathedral, are illustrated. While Belgium affords sketches from Antwerp (a cabinet), the Mont de Piété at Malines, and the noble old Romanesque cathedral at Tournay, which no one who has once seen it will easily forget.

Mr. Norman Shaw has designed a title-page for the volume, which shows that he can do more than draw. He has dedicated his book to the President and Members of the Royal Academy of Arts of London, as a testimony of the great advantages he derived from his connection with the Academy as Travelling Student in the department of Architecture, who will, doubtless, receive it, as we do, as a very satisfactory commencement of his professional career.

Examples of Ancient Domestic Architecture. By Francis T. Dollman, Architect, author of "Examples of Antient Pulpits." Part IV. London: Bell and Daldy. Also by the Author, 6, Albert-street, Regent's-park.

The fourth part of Mr. Dollman's "Examples of Ancient Domestic Architecture," completes the work, and is equal in interest and value to those of which we have already spoken. It contains plans, views, and details of Ewelme Hospital and Grammar School, four plates; the Bede House, Higham Ferrers, three plates; the Alms Houses, Cobham, Kent, two plates; and a view of the Inner Court, Ford's Hospital, Coventry; together with descriptive particulars of all the subjects given in the volume. Mr. Dollman has confined himself to the Charitable Institutions of the fourteenth, fifteenth, and sixteenth centuries. He says,—

"In examining the plans of the various buildings illustrated in the present work, the component parts that appertain to nearly all of them will be found to consist of—an audit-room, occasionally with a muniment-room adjoining; a suite of apartments, more or less extended, for the master or chaplain; an infirmary for the sick; a common hall; a suite of living-rooms for the inmates; and, lastly, a chapel, which, with becoming significance, was always more ornamental in character than the other buildings. In the relative position of these, four principal kinds of arrangement present themselves. The first, and that of which the characteristics are, perhaps, the most definite, is to be found in those instances where the abodes of the inmates were all under one spacious roof, the area being subdivided into small dwelling-rooms or dormitories. This hall communicated directly with the chapel beyond, from which it was only separated by an open screen, thereby affording an opportunity to the sick and aged of hearing the recital of the church's offices, from which, supposing the chapel to be a distinct building, they would otherwise have been debarred. The 'motif' of this wise and thoughtful arrangement may probably have originated with the ancient monastic infirmaries, and among the examples will be found the Bede Houses at Stamford and Higham Ferrers, and St. Mary's Hospital at Chichester. The second kind is where the dwelling-rooms for the inmates were, as before, under one roof, but the chapel, though immediately contiguous to the hospital, was a distinct building, and entered from without: an example of this kind is to be found at St. John's Hospital, Northampton. A third variation is where the abodes of the inmates formed one continuous suite of buildings, sometimes within a quadrangle, but not, like the foregoing, included under one roof, the church or chapel being altogether distinct, but connected with the hospital buildings by an ambulatory or cloister, or by a short covered way only. Examples of this kind exist at St. Cross, near Winchester, Ewelme, in Oxfordshire, and Cobham, in Kent. A fourth mode of arrangement, differing somewhat from the foregoing, is to be met with in the case of Ford's Hospital at Coventry, where the plan consists of a central open court, on each side of which are the almoners' abodes, at one end of the quadrangle the common hall of the hospital, and facing it, at the other end, the chapel."

Irrespectively of its interest as a record, Mr. Dollman's volume will be found valuably suggestive to all who seek to apply the principles of Mediæval architecture in the domestic structures of to-day. The author intimates that he has materials for a second series, and will proceed with the work if the subscribers to the present volume be willing to go on.

The Gothic Model-book: a Collection of Gothic Types and Models, drawn from existing Monuments in Germany. Part I. By V. Statz and G. Ungewitter, with text by A. Reichensperger. Evans and Sons, Strand.

As we have been noticing some not Gothic *model*-books, but collections of examples of Mediæval architecture published in England, we may take the opportunity to make the German work above mentioned known to our readers. It is to be completed in four parts, published quarterly, each containing forty-eight plates of letters, tracery, ironwork of every description, niello or engraved plates, ornaments, stained glass, canopies, buttresses, baptismal fonts, pulpits, tabernacles, altars, gates, arches of every description sculptured in wood, cathedral stalls, ceilings, &c. &c. with descriptive texts,—the latter translated into English.

Its object is "the instruction of amateurs, students, and art-workmen, in the application of the Gothic style to the monuments of architecture and the various branches of the industrial arts, and thus to furnish a collection of types and models, serving at once as an elementary course of instruction for the use of schools of design, and an auxiliary manual for the use of amateurs."

The objects represented are for the most part taken from ancient monuments existing in Germany, and will embrace the epochs from the commencement of the thirteenth century to that of the sixteenth.

The first two parts will be particularly devoted to details, ornamentation, &c.; and the last two parts will consist of complete representations of works in sculpture, ornament, and architecture.

The part before us contains specimens of letters, tracery, niello work, stained glass, some good ironwork (*Schmiede arbeiten*), carved crockets (*laub-bossen*), and finials (*Kreuz-blumen*). The lithography is in a finer line than our artists use, and more like etching.

Miscellanea.

"Murder done Here."—The editor of the *Bridgwater Times*, drawing attention to the ravages of ague at Cannington, and its cause, says,—"There is really so much to be done in sanitary matters that iteration on this point, on the part of those who assist in forming public opinion, is not only excusable, but commendable and necessary. When official authority tells us that 'thousands of deaths annually arise from such diseases as are in the most absolute sense preventible—diseases which either will not arise or will not spread in communities which follow certain well-known sanitary laws, we are disposed to echo the sentiment of that sturdy, sanitary reformer, the editor of the *Builder*, and declare that 'Murder done here' should be written up in many districts of England. Why are we so slack in remedying this state of things? Let an epidemic appear amongst our 'beeves or muttons,' and the whole country is alarmed: it touches our pockets and our stomachs, and men of science and breeders and graziers are at once busy in discovering the cause and finding a remedy; but year after year some tens of thousands of human beings are annually slaughtered in this country by diseases of a preventible character—'diseases,' to use the emphatic words of the Registrar-General, 'of which the very essence is filth,—diseases which have no local habitation except where putrefiable air or putrefiable water furnishes means for their rise or propagation,—diseases against which there may be found a complete security in the cultivation of public and private cleanliness:' and yet who cares? Whose business is it? What money shall we get or save by endeavouring to remedy this state of things? Answers to these questions are demanded of each of us, gentle or simple, landlord or tenant; it concerns us all, and we look and hope for the time when we shall all do our duty."

The Lightning Conductors at two New Churches, in Doncaster.—Some person having expressed surprise at the conductors at St. George's and St. James's, Doncaster, being fixed with common hooks close against the wall, and running straight down through the lead and wood of the roofs and floors, without the intervention of "the usual glass neckcloths," as he called them; he wrote to Professor Faraday, explaining how the conductors were fixed, and asking whether there was any reason for the alarm which had been expressed. Mr. Faraday answers that "there is no occasion for, and no use in, the glass neckcloths, provided the conductors are sufficiently continuous and well connected with the ground," which it is needless to add that they are. The tower of St. George's has a copper rod on each of the great pinnacles, connected with the ground at the foot of the pillars inside the church by a half-inch copper rope. At St. James's, the copper rope is connected with the bottom of the vane rod, about 12 feet below the top of the spire. A spire was knocked over by lightning some time ago, from the conductor being fixed to the vane rod at some distance above the bottom: the lightning naturally went down continuously to the end of the rod, and then had to leap across to the stone, in order to get to the ground, and of course broke the spire in so doing.

Somersetshire Archæological Society.—The members of this society assembled in Bridgwater, on Tuesday in last week, for the purpose of holding their annual meeting. The Assembly-room at the Clarence Hotel was converted into a temporary museum. At the annual meeting the officers were elected. The Rev. F. Warre read the report, which stated that the society was in a prosperous condition. Mr. James Yates, F.R.S. read a paper "On the Mining Operations of the Romans in Britain," in which he referred to the pig of lead found near the Sydney Gardens, at Bath, and to other specimens found on the Mendip Hills, and at Bruton. The Rev. F. Warre read a paper "On the different Types of Primeval Camps." Mr. Elliott read a paper "On the Builder and Designer of St. Mary's Tower, Taunton." The party then proceeded to visit the church. Dinner was provided at the Clarence Hotel; and in the evening a second meeting was held, at which a number of papers, on subjects connected with natural history, were read. The Rev. T. Hugo also read one on Muchelney Abbey.

Oaks in England.—The Parliamentary Oak, in Clipston-park, is said to be 1,500 years old. This park existed before the Conquest, and belongs to the Duke of Portland. The tallest oak was the same nobleman's property: it was called the duke's walking-stick, and was higher than Westminster Abbey. The largest oak in England is the Calthorpe Oak, Yorkshire: it measures 78 feet in circumference at the ground. The Three Shire Oak, at Worksop, is called so from forming parts of the counties of Nottingham, Derby, and York. This tree had the greatest expanse of any recorded in this island, drooping over 777 square yards. The most productive oak was that of Gelenos, in Monmouthshire, felled in 1810: the bark brought 200*l.* and its timber 670*l.* In the mansion of Tredegar-park, Monmouthshire, there is said to be a room, 42 feet long and 27 feet broad, the floor and wainscot of which were the production of a single tree—an oak—grown on the estate.—*Sir W. Symonds.*

Dijon.—The church of St. Michael, at Dijon, has just received a curious *souvenir*, of the late war, consisting of a small bell taken at Bomarsund by the French sailors, and presented to the parish by Marshal Vaillant, minister of war. This bell, which in appearance presents nothing remarkable, seems to have formed one of a set of chimes, as it contains a ring at the end of the clapper. The metal is fine and hard, and its tone strong and melodious. A suitable inscription engraved on it states that it was presented by the marshal to his own parish.

Justice to Ireland.— Lord Eglinton remarked the other day at Derry, that "the increase of live stock in Ireland, since 1852, had been enormous. In round numbers, there had been an increase of 85,090 horses, 570,000 cattle, 75,000 sheep, and 330,000 pigs. Calculating them at the very moderate price of 8*l.* for each horse, 6*l.* 10s. for cattle, 22s. for sheep, and 25s. for pigs, this makes an increase in the value of live stock alone of 5,716,000*l.* In 1852, the average under cultivation was 5,039,000*l.*; in 1857, there were 5,881,000*l.*" In glancing at the past history of Ireland, even as far back as the time of our Henry V. no such hopeful prospect has beamed over this beautiful island. Pauperism is rapidly declining, manufactures are increasing, and the ports on wild parts of the coast assuming great importance.

Repairing a Chimney.—An operation of considerable interest and importance to the building trade, says the *Gateshead Observer*, has just been brought to a successful termination in this borough. The lofty and beautifully proportioned chimney belonging to the Friars' Goose Chemical Works, has several times been struck with lightning, and the brickwork rent and bulged out for a considerable distance down the shaft. The Jarrow Chemical Company having recently taken possession of the works, engaged the services of Mr. H. Wilde, an engineer of Manchester, who undertook the task of repairing the chimney, and fixing to it one of his patent lightning conductors. The workmen commenced operations by flying a large kite over the chimney, and by means of the string a strong rope was got over the top of it. To the end of this rope a short chain and block were attached, and drawn to the top of the chimney—a second rope, previously put over the pulley, being drawn up at the same time. To one end of this rope a cage was attached, the other end being secured to a windlass, by means of which the operator, and whatever building materials might be required, were drawn to the top of the chimney, which is about 250 feet in height. By this simple apparatus the operation was brought to a satisfactory termination without the least accident, and at a considerably less expense than by the usual method of scaffolding, which frequently costs more than the execution of the repairs. The loftiest chimneys on the Tyne have all been erected without lightning-conductors, and afterwards struck with lightning, the repairing of which has cost some hundreds of pounds. Mr. Wilde having now fixed lightning-conductors to most of our manufacturing spires, we may therefore expect that the ravages formerly caused by lightning to these buildings will now be unknown.

Hindoo *versus* English Carpenters.—I once, at Agra, says the author of "The British Army in India," tried an English artilleryman, who had been a sawyer, with a good-sized hand-saw, against ten native carpenters together, with their poor implements and squatting attitude. Though he was out of practice, and not in English health, and they in daily practice, he beat the ten hollow by the evening, having done more work than the whole of them together, and won the prize for which they had unitedly and keenly contended with him.

A deep Shaft.—The deepest coalpit in Great Britain, it is believed, and probably in the world, has, after nearly twelve years' labour, just been completed and opened at Dunkinfield, in Cheshire. The shaft of this pit is 686½ yards deep, and the sinking of it has cost nearly 100,000*l.*

Colonial News.—The new church of St. Philip's, Sydney, New South Wales, is just completed. It is a Gothic building, with nave, clerestory, side aisles, chancel, and tower. From its commanding position and its height, it forms a striking object from nearly every portion of the city and suburbs. Public improvements are going on in Sydney with some rapidity. The banks are providing themselves with new premises, and many private establishments have also erected buildings of some architectural pretensions, among which the *Sydney Morning Herald* office stands prominent. A new town-hall, to contain a public-room, 120 feet by 60 feet, is about to be erected.——At Launceston there is said to be ample and profitable employment for labouring people of all kinds, including, according to the *Launceston Examiner*, carpenters, joiners, cabinetmakers, blacksmiths, sawyers, quarrymen, stone-cutters, stone-masons, brickmakers, lime-burners, bricklayers, painters and glaziers, paperhangers, gilders, a moderate number of working engineers and engine-fitters, and, in fact, all kinds of labouring persons and mechanics.——It is the intention of Government to send out forthwith to British Columbia a force of royal engineers, provided with everything necessary for the formation of roads and bridges to open up the resources of this new colony, and to erect block-houses for the safe custody of gold.

The Gloucester Citizens and their Corporation on the Public Fountain Question.—The appearance of our engraving of "A Proposed Fountain for Gloucester," in the *Gloucester Mercury*, has not been without its good effect, as appears from the fresh attention which it has turned to the doings of the city corporation in respect to the ancient public spring at Robin's-wood-hill. The corporation have lately been indicted, as the Local Board of Health, for a nuisance, in cutting off this spring and tearing up the pipes, aqueducts, and other works which conveyed the same to Gloucester, and destroying the public and gratuitous supply of water, without providing a sufficient substitute,—in contravention of the Public Health Act; and the city grand jury have found two true bills against them, thereanent, one as a board of health and the other as the city corporation, for destroying the conduits in Southgate-street. The tenant of the corporation on the Robin's-wood-hill property has also been brought up for destroying the ancient public paths leading to the hill, though authorised to do so by the corporation; and having pleaded guilty, and promised to restore the paths, judgment against him has been suspended.

Railway Matters.—The cost of working a passenger train between Liverpool and London, says the *Albion*, is ascertained to be 2s. 6d. per train mile, or say 25*l.* It follows, therefore, that the cost of each passenger for a train of 500 is 1s. 0½d.; 400, 1s. 3d.; 300, 1s. 8d.; 200, 2s. 6d.: 100, 5s.; 50, 10s.; 25, 1*l.* 4s. The above results prove that express trains, carrying only first-class passengers, few in number, do not pay, while the parliamentary trains yield the profit, low fares bringing quantity.——It is said to be the intention of Prince Napoleon to give a fresh and continuous impulse to the construction of railways in Algeria. Several new lines are under consideration, which are to be offered to public competition. The troops are to be employed in the formation of the earthworks, by which a considerable saving of time and expense will be effected. The troops, on their part, receive the stimulus of an addition to their pay.

Gas.—The Liverpool United Gaslight Company have agreed, as usual, to a dividend, at the rate of 10 per cent. for the last half-year, and the conversion of 600 shares into the general capital stock, to be divided among the holders.——The trustees of Workington have commenced new gasworks on the Marsh, near the ironworks. Messrs. Graham, Bolton, and Co. of Cockermouth, are contractors for the erection of the building; and the whole is being carried out under the supervision of Mr. J. H. Little, of Newcastle-upon-Tyne, gas-engineer. ——The hall of the New Town Hall at Newcastle has been lighted with gas, on a plan proposed by Mr. Johnstone, architect. The principle is the same as that of the Free-trade Hall at Manchester. There are ten sunlights, five being placed at each side of the roof, and one light at the narrow end of the hall, under the gallery. Active exertions are being made to have the hall inaugurated with becoming *éclat* on the 1st of September.

Minerva in the Parthenon.—Marvellous were the impressions produced by the goddess. The sun glowed upon the statue in golden rays, through the semi-open ceiling of the temple. The sight of the sacred altar, and, in the rear of the goddess, the treasury of the temple, of which she was the keeper, all this lent peculiar charm and majesty to the virgin goddess, as she stood in her virgin home, the Parthenon. The citizen of Athens might well give himself up to the most enthusiastic admiration, and exclaim with the poet;—

"Nimmer wird Eos Reicheres schauen
Und nicht Göttlicheres!"

To comprehend this enthusiasm, we must call before our imagination, not the faded and monotonous colours of our northern architecture, but the rich and gorgeous colours of Grecian art, and the still more luxuriant colours of the Grecian skies. The gold and ivory of the statues, the embellishment of the walls, the beautiful ornaments on the friezes, of the triglyphs, of the metopes, and all the thousand fairylike art treasures of the temple, received a new life and a new fascination from the glowing reflection of the sun, and the general beauty of nature in Greece. Indeed, nature seems to have supplied Attica with such remarkable marble, in order to give to the sun a worthy aim for his light, and to the artists a worthy material for their conceptions. The effect which the sun has upon the Parthenon is as marvellous at the present day as it was at the time of Phidias. The Parthenon may still be likened, when bathed by the rays of the sun, to a mighty rose and gold-coloured fire, which rises from a dark background, sending its flames towards heaven. The German traveller, Brondstedt, describes it as a great fire, kindled in past, and memorable, and splendid periods, which continues to retain its glow, to burn on slowly and quietly, after the lapse of ages, and for all time to come.—*The Crayon.*

Southampton Dock.—In reference to the late accident in the inner dock, Mr. A. Giles, the engineer, reports that, after a careful examination of the present condition of the north wall of the inner dock, his previous impressions had been confirmed; namely, that the movement was entirely owing to the water having been drained from under the foundations, thereby causing a vein of sand to be compressed and to slide forward. When the foundations of this wall were laid seven years ago, the soil appeared perfectly sound, and the borings taken previously did not indicate the presence of any quicksand: the fact, however, showed that a length of 380 feet had sunk 1 foot 11 inches in the centre, and had slid forward 5 feet 3 inches at the extreme point; yet, so perfect was the cohesion of the material of the wall, that there was no more disruption than was due to a straight line having been stretched into a curve; and when it was remembered that the base of the wall was 24 feet thick and carried 5 feet below the bottom of the dock, that it sustained its full pressure while the mortar and concrete were fresh and green, and also that it stood firm for ten weeks after the water was pumped out of the dock, such a failure could certainly not have been expected. In restoring the wall to its original line he states that the back of the wall can be sufficiently strengthened by adding large counterforts of concrete, after which the face may be rebuilt and protected where necessary by sheet piling at a cost of about 3,000*l.* The work of repair may be proceeded with at once, and need not at all endanger the stability of the D warehouse. The directors state their conviction that the accident did not arise from any defect in the strength or construction of the wall, nor from any cause which could have been foreseen or prevented, and that the wall may be repaired, and the inner dock completed and rendered in every respect as perfect and efficient as if no such accident had occurred.

Sash Windows.—"A. A." writes to *Notes and Queries*,—What is the history and origin of these windows. The derivation of the word is no doubt the French *chassis*, a groove, or anything that slides in a groove. They seem first to have come into use after the Great Fire. But they must have been rare in Queen Ann's reign, as appears from the following advertisement in the *Tatler*, No. 178, May 27 to 30, 1710:—

"To be lett, in Devonshire Square, near Bishopsgate, a very good Brick House of 3 Rooms of a Floor, and a good Hall, with very good light and dark Closets, the whole House being well wainscotted, and *sash'd with* 30 *Sash Lights*, a very pleasant and convenient Office below Stairs, a good Yard, a good Vault for Wine, &c., with a very good Warehouse and Cellar for Merchandize. Enquire at the Baker's in Devonshire St', near the House."

Accidents to Property and Person.—The new pier at Burnham has met with a mishap. It has sunk along nearly its entire length, on the cutting side, and the wall which supports it has bulged, thrusting from its side the wooden buttresses intended for its support. The effect of this has been to disarrange the rails, and to so loosen the paving-stones that the first heavy sea will probably wash them away. The Somerset Central Railway directors have resolved to call upon the contractors, Messrs. Rigby, to repair the damage, they having undertaken to keep the work in repair for twelve months after its formation. The cost of reparation, it is said, will be heavy. ——As a well-digger was engaged, on Monday in last week, in the excavation of a well in New-street, Chelmsford, when at a depth of about 26 feet, the sides gave way, and the man was buried beneath a mass of earth and bricks, from which he was only extricated after eight hours' hard toil, though happily alive, and without any material injury.——A fatal accident has just occurred at the new works in progress at Alnwick Castle. A joiner was on the roof of the new kitchen, when, by some means, he fell through, and was killed. This is said to be the fourth fatal accident since the rebuilding began.——The bridge crossing the Stockton and Darlington Railway at Howden, on the Wolsingham and Bishop Auckland turnpike, has been a second time on fire. Arrangements have been made for its repair. The beams having been *coated with coal tar*, the flames rapidly spread, until that on the west side was destroyed.

The God of Steam in China.—During the eventful progress to Tien-tsin of the allied mission of modern civilization to the antiquated Chinese, the river borderers, so far from attempting to oppose the progress of the allies, collected in crowds upon the banks of the river, prostrating themselves with their foreheads to the ground as the first gun-boat passed. It was the first time that the "devil-ship" of the barbarians had disturbed the muddy waters of the Pehio, or that the agitated pant of a 60-horse power steam-engine had aroused from noonday siesta the placid inhabitants of its banks. But they did not content themselves with gazing at or worshipping the god of steam. Regarding it as the precursor of a power destined to overthrow the present dynasty and raise itself upon its ruins, they faced the decrees of fate, says the correspondent of the *Times*, in a spirit worthy a nation which has preserved its existence throughout changing dynasties for countless ages, and, with cries of "Hail, great king! welcome, oh, king! come thou and reign over us, and be our emperor!" they brought cattle, and poultry, and vegetables down as presents.

Edinburgh.—A great deal of building work, says the local *Post*, is about to be commenced in Edinburgh, or may be expected. As recently noticed, 10,000*l.* have been voted for a new museum. A pertinent is to be added to the Register-house, which is to occupy the site of the tavern so often referred to in the *Noctes Ambrosianæ*, and which is in the ancient Gabriel-road: Parliament has voted upwards of 7,000*l.* for this purpose. Again, a new national Post-office is to be set down to occupy the place of the Theatre-Royal and Shakspear-square. An Act of Parliament has been obtained for the building, which will absorb a large amount of public money. Measures should be taken to have Trinity College Church erected. The building would afford much employment; and, in carrying out the original design, a school for masons in the delicate manipulation of the Gothic might be established. There are something like 20,000*l. in retentis* for this one object.

Scientific Congress of France.—The *Congrès Scientifique de France* will be held this year at Auxerre. It will commence on the 2nd of September and last ten days. There are five sections: the fourth is appropriated to history and archæology; and the fifth to literature and the fine arts. Various archæological excursions are arranged for.

The Cambridge School of Art.—At a meeting of the provisional committee of this school, at the Guildhall, the honorary secretary, the Rev. W. J. Beaumont, explained the objects of the institution, and the nature and amount of the assistance that would be given by the Government. It was carried unanimously, "That it is desirable to establish a Cambridge School of Art." It was also resolved, that it is desirable to raise at least 100*l.* for the purpose of commencing the school, and conducting it for the first year. A sub-committee was appointed to take measures for securing suitable premises, and the meeting was adjourned.

Exploration at the Rye House, Hoddesdon.—An interesting exploration has recently been made by Mr. Teale, under the ancient gateway of the Rye House, Hoddesdon. A tradition has been handed down that a subterranean passage extended from the Rye House to Nether Hall, in Essex. Mr. Teale determined on ascertaining somewhat respecting the truth of the story, and, accordingly, commenced excavating under the brick staircase of the tower. After clearing out several cart-loads of earth, a passage was discovered descending round the central foundation of the staircase. After going to a considerable depth there was found a huge stone, which might have served for a coffin, but which, from the position in which it was placed, had probably served as a living prison. A passage was next found, leading off westerly from the tower, and after proceeding some yards a cell was discovered, with huge iron door and grating: inside this cell is a seat of brickwork running the length of the interior, eight or ten feet. A faint ray of light glimmers in from above. A passage branching off north under an arched doorway, near the cell grating, has been blocked up for the present: another leading south was cleared out and explored, and an entrance has been made from it into the garden, south of the tower. Some curious specimens of antiquity were found; coins, some Roman; a sword, a remarkable spear, and other weapons. The excavations are to be continued.

Discoveries at Bowdon Parish Church.—In the demolition of the chief part of the old church, preparatory to its re-erection, restoration, and extension, many interesting remains of previously existing buildings have been brought to light, and which consist chiefly of mouldings, window-tracery, caps, bases, and monumental slabs. There still remains the tower, with portions of the north aisle, in the walls of which it is hoped that many fragments of equal interest to the antiquary may be discovered. Taking, however, the evidence furnished by the discovered remains, it must be assumed that a church of no mean importance was erected here in the time of the Normans. Of this church has been recovered the richly-moulded attached base of a pillar, having the cable-mould worked upon its most prominent members; also part of the shaft of this pillar, which is circular on plan, with the exception of one quarter: this quarter has been left square to fit the inner angle of the jamb or pier, to which both this and the base originally belonged. It is 6¼ in. diameter: the base is 9 in. in height.

The New North Dock at Liverpool.—The new timber dock, north of the Huskisson Dock, was lately opened. It comprises 17¾ acres of water-space; has been named "The Canada;" and entrance is obtained from the north end of the Huskisson Dock by two cuts, or passages, one 80 feet, and the other 50 feet wide, spanned by a single iron bridge of 202 feet long and 30 feet wide. The quay storage ground for the timber trade is 1,385 feet in length. For the present, the west side of the dock is to be appropriated to the use of steamers. The quay space, that is lineally, is 1,272 yards. The subject of a still further dock extension, at the north side, is shortly to be brought before the Mersey Dock and Harbour Board. The total area of the Liverpool Docks at present, including basins, according to the *Journal*, is 235 acres, with 17 lineal miles of quay space. When the Birkenhead Docks are completed, they will add more than one-half, indeed nearly two-thirds to that amount. At present, including the Great Float, they comprise 121 acres; and 32½ acres, consisting of docks, 7½, 11, and 14 acres respectively, are to be added to the 121 acres, before the projected works will be complete.

The Liverpool Society of Arts.—The arrangements for the opening of the first exhibition of paintings, drawings, and sculptures by modern artists, under the auspices of the new Liverpool Academy of Arts, are in a forward state, some of the pictures having already arrived. Of these the most important is Sir Edward Landseer's picture of "The Maid and the Magpie," which has been insured by the society for 1,500*l.* There is also Mdlle. Rosa Bonheur's painting of "The Horse Fair," which has been insured for 1,000*l.* Upwards of 600 pictures in all are promised.

The New Water-Works of Cork.—The citizens of Cork have now a plentiful supply of water. The engine is capable of raising 2,000,000 gallons of water per day to the large reservoir lately built, which is at the height of 180 feet above the river, the quantity raised at each stroke of the pump being 160 gallons. The boilers have been set by Mr. Carlisle, of Belfast. Precautions have been taken for straining the water from impurities on its passage to the reservoir. The higher reservoir, which is intended merely for the supply of the few most elevated localities of the city, is on an elevation of 360 feet, and will contain 630,000 gallons.

Relics discovered at Wells.—In the course of pulling down and removing the remains of the old Priory or Hospital of St. John (founded, A.D. 1206), on the site of which the new city schools are being erected, numerous interesting relics have been discovered. In a chimney stack, supposed to have been built soon after the Reformation, when the priory was dissolved, there were found several elaborately sculptured fragments of the ancient reredos or altar-screen, chiefly consisting of canopies of niches, beautifully illuminated, portions of the gilding being as bright as when it was first laid on. Coins of different kinds have also been found, together with several old keys and other objects.

Electro-Telegraphic Progress.—An agreement has been concluded between the Treasury and the Red Sea Telegraph Company, for the establishment of a telegraphic line from Alexandria to Aden, down the Red Sea, and thence to Kurrachee, following the line of coast of South Arabia. The Treasury is to guarantee a rate of interest on the amount of capital paid up from time to time (not exceeding 800,000*l.*) of 4½ per cent. per annum, payable half-yearly, for the term of fifty years certain. The directors have made a contract with Messrs. Newall, for submarine cables, on such terms as will leave a surplus capital of about 300,000*l.* The concessions obtained leave the entire control over the line, as regards all but local Turkish messages, in the company's hands.——Captain S. Samuels, the commander of the Dreadnought, hospital ship, has been describing, at the Liverpool Exchange, a patent plan of his for laying down submarine cables, the chief point in which consists in paying out the cable through a tube forming an inclined plane amidships instead of by the stern, there being less likelihood of undue strain in the centre of the ship than at either extremity.

[Advertisement.]

Self-coiling Convoluted Shutters.—The utility of Revolving Shutters for closing windows and other openings is universally acknowledged; but the cost has hitherto prevented their general adoption. Messrs. CLARK and CO. of 15, Gate-street, Lincoln's-inn, have recently introduced a new Self-coiling Revolving Shutter, which, in addition to being one-half the expense, has the advantage of being remarkably simple, and consequently less liable to get out of order. All the complicated gearing apparatus is dispensed with: there are neither wheels, shafts, rollers, cords, nor weights, to become deranged.

The Patent Self-coiling Shutter is composed of laths in metal or wood, which are connected by bands, or strips of tempered steel, that form the connection between the laths, and also cause them to coil, or roll themselves up into a circular space, above, below, or on either side of the window: grooves are formed in which the ends of the laths slide, and when the shutters are closed, keep the springs straight: the springs also counterbalance the weight of the shutters, which are opened and closed with the greatest facility. We are disposed to think they will be largely used, both for shop-fronts and private houses. Much of the difficulty now often found in providing shutters for large bow windows may be obviated by their use, without extra cost.—*From the Builder, June 26th, 1858.*

TENDERS.

For alterations of Mile-end Silk and Braid Factory, for Messrs. J. J. Foot and Sons. Mr. Francis H. Fowler, architect:—

Case	£417 0 0
Read and Son	397 0 0
Hall	394 0 0
Thorpe (accepted)	387 0 0

Building rear of 15, 16, 17, Broadway, Deptford. Mr. Whichcord, architect:—

	New Building.	Allowed for Old Materials.	Total.
Mitchell, Deptford	£507 10 0	£ 4 0 0	£503 10 0
Hall, Deptford	535 0 0	35 0 0	500 0 0
Walbutton, City	480 0 0	5 0 0	475 0 0
Smith, jun. Deptford, (accepted)	481 10 0	17 10 0	464 0

HASTINGS HOTEL.

We are requested to insert the following reply to a letter from Messrs. Dove, asking to be informed of the reason why their "Tender for the Hastings Hotel was not accepted, it being lower than Messrs. Holland's":—

Gentlemen,—The surveyor was premature in the announcement in the *Builder*: no tender is yet definitely settled upon. I may mention that your tender was not in accordance with the condition, that part of the payments should be taken by the contractor in paid-up shares; and your tender specified that no shares would be taken. Francis H. Fowler.

Sir,—Allow me to state the circumstances under which my tender for the Hastings Hotel was not accepted. The company required the builder to take two-fifths of the amount of his tender in shares, which I declined; and therefore, although my amount was the lowest, I was not accepted. I hear since that Messrs. Holland and Hannen have declined the works. W. Moxon.